NEBRASKA INFORMATION TECHNOLOGY COMMISSION
Monday, September 16, 2002, 1:30 p.m.
Video Conference Sites:
Executive Building-Videoconference Room 103, 521 South 14th Street, Lincoln, Nebraska
Panhandle Station-High Plains Room, 4502 Avenue I, Scottsbluff, Nebraska
Kearney Public Library-Information Center, 2nd Floor, 2020 1st Avenue, Kearney, Nebraska
AGENDA

Meeting Documents:
Click the links in the agenda
or click here for all documents (1.70 MB)

1:30 p.m. Call to Order and Roll Call – Lt. Gov. Heineman

1:35 p.m. Notice of Meeting and Approval of June 18, 2002 minutes – Lt. Gov. Heineman

1:40 p.m. Public Comment

1:45 p.m. Report from the Councils, Technical Panel and Staff

A. Community Council
   1. Council Report
B. Education Council
   1. Council Report
   2. **Membership Changes***
C. State Government Council
   1. Council Report
   2. **Membership Changes***
D. Technical Panel
   1. Panel Report
E. Staff Reports
   1. Summary of agency information technology comprehensive plans
   2. Action Items Update
   3. Budget Review Timeline

2:30 p.m. NETCOM Update

3:00 p.m. **Network Nebraska Workgroup Final Report and Recommendations***

PowerPoint Presentations	PDF	Power Point
Network Nebraska / NETCOM Update (Schafer)		
DTV Datacasting (Beach)		
NETCOM Phase I - Education Focus (Weir)		

3:45 p.m. New Business

4:00 p.m. Adjournment

Next Meeting: November 13, 2002, 1:30 p.m.

(Bolded * indicate Action Items.)

Meeting notice was posted to the NITC and Public Meeting Calendar Websites on September 4, 2002.
Agenda was posted to the NITC Website on September 10, 2002.

NEBRASKA INFORMATION TECHNOLOGY COMMISSION

Tuesday, June 18, 2002, 1:30 p.m.
Executive Building-Videoconference Room 103, 521 South 14th Street
(Due to technical difficulties with videoconferencing the meeting had to be moved from Room 1507 State Capitol Building)
Lincoln, Nebraska

PROPOSED MINUTES

MEMBERS PRESENT:

Lieutenant Governor Dave Heineman, Chair
Greg Adams, Mayor, City of York
L. Merill Bryan, Senior Vice President & Chief Information Officer, Union Pacific
Dr. Doug Christensen, Commissioner, Department of Education
Dr. Eric Brown, Manager, KRVN Radio
Trev Peterson, Attorney, Knudsen, Berkheimer, Richardson, and Endacott, LLP
Dr. L. Dennis Smith, President, University of Nebraska

MEMBERS ABSENT: Hod Kosman, CEO, Platte Valley Financial Services

CALL TO ORDER, NOTICE OF MEETING AND ROLL CALL

The Chair, Lieutenant Governor Heineman, called the meeting to order at 1:35 p.m. There were seven commissioners present at the time of roll call. A quorum existed to conduct official business. Lieutenant Governor Heineman stated that the meeting notice was posted to the NITC and Public Meeting Calendar Websites on June 11, 2002 and that the meeting agenda was posted to the NITC Website on June 12, 2002.

APPROVAL OF APRIL 30, 2002 MINUTES

Commissioner Christensen moved to approve the April 30, 2002 minutes as presented. Commissioner Adams seconded the motion. Roll call vote: Adams-Yes, Brown-Yes, Bryan-Yes, Christensen-Yes, Heineman-Yes, Peterson-Yes, and Smith-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

PUBLIC COMMENT

There was no public comment.

NETCOM PILOT PROJECT UPDATE
Brenda Decker, Director, Division of Communications

The Division of Communications has been working with Sprint on pricing issues. The State and the provider are struggling with the description of services and what needs to be done to get those services. The one-year contract may also be affecting the pricing issue. Final price costs have not been submitted. It has been a learning process for both the State of Nebraska and the provider.

Issues that NITC must be aware of…

- Services under contract now have termination clauses, which will affect the cost of the pilot project.
- Current economic conditions of the state. We must affirm bandwidth requirements in the face of potential budget cuts.

Discussion and questions followed regarding: volume pricing in the negotiations; the possibility of a two-year contract versus a one-year contract; other avenues besides telephone companies as the vendor; last mile issues; and assistance from the Public Service Commission.

Lieutenant Governor Heineman will arrange a meeting with Sprint if necessary. Commissioners will be updated on the meeting results.

REPORTS – COMMUNITY COUNCIL
Anne Byers, Community Information Technology Manager

The council has not met since the last NITC meeting. Ms. Byers provided a brief summary of the Community Technology Fund report. A total of five projects were awarded in 2000 and eleven in 2001.

REPORTS – EDUCATION COUNCIL
Renee Bose, Education Council Member

Education Council has had one meeting since the April 30 NITC Meeting. Agenda items included the following:

- Recognition of members and alternates that were departing the council after two or more years of service: Doctors Joseph Preusser, Woody Ziegler, Rob Ziegler, and William Berndt.
- Revision and grammatical wording of their six priorities and officially recommended seven action items for inclusion in the Statewide Technology Plan (retaining or revising four action items from 2001-02 and adding three new ones).
- Formation of a committee to take the lead in inventorying Nebraska K-12 and Higher Ed institutions' use of course/knowledge management tools such as Blackboard and WebCT. This report will be ready for the Education Council on July 19.

Telecommunications Training Grants Update. Tracie Klosterman, NET staff member, provided a brief summary of the grant update and was available to answer any questions.

Education Council Membership. Ms. Bose presented the names of seven members who will be renewing their 2-year terms. There is also one Council member who is retiring and another council member who is choosing not to continue. These additional appointments will be an action item for the next NITC meeting.

Commissioner Christensen moved to approve the Education Council's recommendation for membership renewals. Commissioner Smith seconded the motion. Roll call vote: Smith-Yes, Peterson-Yes, Heineman-Yes, Christensen-Yes, Bryan-Yes, Brown-Yes, and Adams-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

REPORTS – STATE GOVERNMENT COUNCIL
Steve Schafer, Chief Information Officer

The council met in May for a working session to review and revise the action items that are now reflected in Statewide the Technology Plan. The council met on June 13th to approve the action items and discuss current projects. The council wants to develop standards for state government that will be brought before the Technical Panel. The Security Work Group is focusing on preparing guidelines for agency I.T. contingency plans and conducting a security assessment for the state. A Security Awareness Day for state government is scheduled for July 15th. The July council meeting will focus on retention of electronic records. Because of recent problems with having enough members for a quorum, the council may propose membership changes to the NITC for approval at a future meeting. The GTCF Grants Update was sent to commissioners prior to the meeting.

Mr. Schafer entertained questions and comments from the Commissioners.

REPORTS – TECHNICAL PANEL
Walter Weir, University of Nebraska, Chief Information Officer

The Technical Panel has held two meetings since the last NITC meetings. Agenda items included:

- Regular updates on the Wireless Project, Network Architecture Work, Group (NETCOM), Security Architecture Work Group, Accessibility Architecture Work Group, and the Nebraska Network Work Group, and
- Technical reviews for Grant Projects funded by the Records Board

New Member (CIO Alternate). At the May meeting, the Technical Panel voted to recommend Rick Becker, Government Information Technology Manager, to serve as the alternate for Steve Schafer, Chief Information Officer.

Commissioner Smith moved to approve Rick Becker, as alternate for the Chief Information Officer. Commissioner Brown seconded the motion. Roll call vote: Christensen-Yes, Heineman-Yes, Bryan-Yes, Peterson-Yes, Brown-Yes, Smith-Yes, and Adams-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

Standards and Guidelines: Incident Reporting. At the May meeting, the Incident Reporting Policies and Procedures were approved by the Technical Panel for recommendation to the NITC for final approval.

Commissioner Adams moved to approve the Incident Reporting Policies and Procedures for State Government. Commissioner Peterson seconded the motion. Roll call vote: Heineman-Yes, Christensen-Yes, Peterson-Yes, Bryan-Yes, Smith-Yes, Adams-Yes, and Brown-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

Mr. Weir entertained questions regarding hacking of systems, as well as, homeland security.

Standards and Guidelines: Workstation Guidelines for State Government and the Workstation Guidelines for K-12. At the May meeting, the Workstation Guidelines for State Government and for K-12 were approved by the Technical Panel for recommendation to the NITC for final approval.

Commissioner Peterson moved to approve the Workstation Guidelines for State Government and for K-12. Commissioner Bryan seconded the motion. Roll call vote: Bryan-Yes, Peterson-Yes, Brown-Yes, Smith-Yes, Adams-Yes, Heineman-Yes, and Christensen-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

REPORT – STAFF
Steve Schafer, Chief Information Officer

I.T.I.F. (Information Technology Infrastructure Fund)

I.T.I.F. NIS (Nebraska Information System). There have been changes in the project's timeline and these have been posted to their web site. A change order is being negotiated. There are growing concerns about the number of interfaces and modifications. Recent developments include the following: added resources to the project, management wants to empower the project team for best practices; and special emphasis has been placed on finishing the specification for the interfaces. Currently, the University is writing interfaces in cooperation with NIS but there are still concerns regarding warrant writing.

I.T.I.F. CJIS Federal Access Project. The project is working towards access to federal databases through the CJIS Internet portal. The State Patrol has been involved but they are now focused on other projects at the moment. The Crime Commission is seeking other avenues to get this done.

I.T.I.F. Wireless. No progress to report since the last NITC meeting.

I.T.I.T. DOC Statewide Network Coordination Project Proposal. As identified in LB 543 (2001 Budget Bill), this project proposal is for continuation of the coordinator associated with the successor project(s) of the Telecommunications Infrastructure Needs Assessment. Representation for the education community and other participants in the planning, development, and implementation of a state wideband network service will be required during the forthcoming FY2002-03. At the June 11th Technical Panel meeting, the project proposal was approved for recommendation to the NITC for final approval.

Commissioner Adams moved to approve the DOC Statewide Network Coordination Project Proposal. Commissioner Brown seconded the motion. Roll call vote: Brown-Yes, Smith-Yes, Adams-Yes, Bryan-Yes, Christensen-Yes, Heineman-Yes, and Peterson-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

Review Schedule for Preparing Reports to the Governor and Legislature.
State statutes require the N.I.T.C. to conduct three activities this year. Section 86-1506 requires a prioritized list of project by November 15th. Each of the councils will assist in prioritizing the budget requests. Section 86-1508 requires a biennial progress report by November 15th. Section 81-11,102 requires an annual report of the Information Technology Infrastructure Fund. The NITC will be meeting in early November to approve the recommendations.

Update on Agency I.T. Comprehensive Plans. This agenda item was tabled until next meeting.

STATEWIDE TECHNOLOGY PLAN UPDATE

State statute requires an annual review of the plan by the NITC. The Commissioners had no recommendations for changes.

Commissioner Smith moved to approve the Statewide Technology Plan Update. Commissioner Brown seconded the motion. Roll call vote: Smith-Yes, Brown-Yes, Christensen-Yes, Heineman-Yes, Bryan-Yes, Peterson-Yes, and Adams-Yes. Results: 7-Yes and 0-No. The motion was carried by unanimous vote.

NEBRASKA NETWORK WORKGROUP UPDATE
Steve Schafer, Chief Information Officer

At the April 30th NITC meeting, the Commissioners received an interim report. The interim report identified weaknesses and strengths of existing networks and summarized networks in nine states. Work on the draft final report with specific recommendations continues. Some of the most important recommendations include the need to move forward with aggregation for purchasing power and a telecommunication backbone, as well as, the need to share in the development of an IP centric network. There are communities of interests ready to move forward on the IP centric network but for long-term purposes there is a need to look at how these systems can work together. The timeline is still to have the draft ready by end of July for a 30-day public comment period.

NEW BUSINESS

Lieutenant Governor Heineman announced that the public health alert system implementation for the State will occur the first week in July. The University of Nebraska Medical Center has played a vital role in this endeavor.

NEXT MEETING AND ADJOURNMENT

The next meeting of the Nebraska Information Technology Commission will be held in September. The date and location will be announced at a later date.

Commissioner Brown moved to adjourn the meeting. Commissioner Christensen seconded the motion. All were in favor. The motion was carried by voice vote.

The meeting was adjourned at 3:19 p.m.

Meeting minutes were taken by Lori Lopez Urdiales and reviewed by staff of the Office of the NITC/CIO.

September 9, 2002

To: NITC Commissioners

From: Anne Byers

Subject: Community Council Report

IT Planning and Mini Grant Program. In partnership with Technologies Across Nebraska, the Community Council will be working with eight communities to develop local information technology plans. The eight communities selected to participate in the program are Alliance; Brown/Keya Paha/Rock Counties; Crawford-Harrison; Custer County; Edgar; Fillmore County; West Point; and York County. The participating communities will also serve as pilots for the Community Information Technology Toolkit. The toolkit includes the newly developed *Information Technology Assessment and Planning Workbook*. The workbook is available at http://www.nitc.state.ne.us/toolkit/workbook/ . The workbook is the most complete resource on local information technology planning available. Information on the workbook and the IT planning pilot project will be presented at the Nebraska Rural Institute in Gering on September 17 and at the Rural Telecon Conference in Des Moines on October 8.

RUS Community Connect Broadband Grant Workshop. The Nebraska Information Technology Commission is co-sponsoring a workshop on preparing USDA Rural Utilities Service Community Connect Broadband Grant applications. The grant program provides funding for small, economically challenged communities to provide broadband access. The workshop will be broadcast to satellite downlink sites on Sept. 24 from 2:30 to 4:00 P.M. CT. Information on the workshop is available at http://www.nitc.state.ne.us/RUSworkshop .

Inventory and Gap Analysis Update. One of the Community Council's action items includes working with Technologies Across Nebraska to complete an inventory of IT-related programs and to conduct a gap analysis. At the September 6 Community Council meeting, members reviewed the inventory of resources submitted by Technologies Across Nebraska partners and an inventory done by Congressman Tom Osborne as part of this Rural Economic Development Handbook and Resource Guide. Members concurred that together the two inventories accurately reflected available resources for communities. In a preliminary gap analysis, members identified the following needs:

- There is a lack of motivated local leadership in many communities.
- There are few effective regulatory remedies for poor Internet service.
- There is a need for technical assistance in evaluating broadband technologies.
- Additional information on providing incentives for alternative service providers is needed.
- Information on new models of private-public partnerships need to be developed including sample cooperative agreements needs to be available.

Additional information will be gathered from Technologies Across Nebraska members and the communities participating in the IT planning pilot program.

Telehealth Update. The Nebraska Public Service Commission recently released an order asking for more information on providing up to $750,000 in support from the Nebraska Universal Service Fund for health care. Written comments must be filed by September 25 and a hearing will be held on October 8. Several members of the Telehealth Subcommittee are planning to testify.

Nebraska Information Technology Commission
EDUCATION COUNCIL

Membership Replacements Effective September 16, 2002

Name	Representing	Status
	HIGHER EDUCATION	
Dr. Jerry Moskus	Community College System President, Metro Community College	**Recommend Approval**
	K-12 EDUCATION	
Mr. Terry Haack	NE Council of School Administrators Principal, Elkhorn High School	**Recommend Approval**

Brief Bio for Dr. Jerry Moskus

Dr. Jerry Moskus, President of Metropolitan Community College, is the Community College Association's recommended replacement for Dr. George Mihel. Dr. Moskus has a rich history in integrating and implementing technology into the learning process with previous experience in grant writing and economic development involving major hardware and software companies. With degrees from Illinois State University, Dr. Moskus has been President at Metro Community College since July, 2001. He has held previous community college administrative positions in Oregon, Iowa, and Illinois.

Brief Bio for Mr. Terry Haack

Mr. Terry Haack, Principal of Elkhorn High School, is the Nebraska Council of School Administrators' recommended replacement for Dr. Rob Ziegler. Mr. Haack has been instrumental in the design and writing of the National Educational Technology Standards (NETS) for school administrators, developed in conjunction with the International Society for Technology in Education (ISTE). With 13 years of administrative experience in Beatrice and Elkhorn Public Schools, Terry has been involved in several statewide and national administrator technology initiatives.

Nebraska Information Technology Commission

--State Government Council Charter--

1. Introduction

The Nebraska Information Resources Cabinet ("IRC") was created in January 1996 by Executive Order 96-1. The IRC was re-established as the Government Council of the Nebraska Information Technology Commission (hereafter referred to as "Commission") through Executive Order 97-7 in November 1997. The Commission became a statutory body in Laws 1998, LB 924, and the Commission re-established the State Government Council (hereafter referred to as "Council").

2. Purpose

The purpose of this Charter is to clarify the role of the Council and its relationship with the Commission.

3. Authority

The Nebraska Information Technology Commission shall: "Establish ad hoc technical advisory groups to study and make recommendations on specific topics, including work groups to establish, coordinate, and prioritize needs for education, local communities, and state agencies[.]" Neb. Rev. Stat. § ~~86-1506(7).~~86-516(7).

"Information technology means computing and telecommunications systems, their supporting infrastructure, and interconnectivity used to acquire, transport, process, analyze, store, and disseminate information electronically." Neb. Rev. Stat. ~~§ 86-1504(2)~~§ 86-507

4. Commission Mission and Responsibilities (Neb. Rev. Stat. § ~~86-1506)~~86-516)

4.1 Commission Mission

"The mission of the Nebraska Information Technology Commission is to make the State of Nebraska's investment in information technology infrastructure more accessible and responsive to the needs of its citizens regardless of location while making government, education, health care and other services more efficient and cost effective."~~*http://www.nitc.state.ne.us/*~~

4.2 Commission Responsibilities:

4.2.1 Adopt policies and procedures used to develop, review, and annually update a statewide technology plan;

4.2.2 Create a technology information clearinghouse to identify and share best practices and new developments, as well as identify existing problems and deficiencies;

4.2.3 Review and adopt policies to provide incentives for investments in information technology infrastructure services;

4.2.4 Determine a broad strategy and objectives for developing and sustaining information technology development in Nebraska, including long-range funding strategies, research and development investment, support and maintenance requirements, and system usage and assessment guidelines;

4.2.5 Adopt guidelines regarding project planning and management, information-sharing, and administrative and technical review procedures involving state-owned or state-supported technology and infrastructure. Governmental entities, state agencies, and political subdivisions shall submit projects that directly utilize state-appropriated funds for information technology purposes to the process established by NEB. REV. STAT. ~~§§86-1501 to 86-1514.~~§§86-512 to 86-524. Governmental entities and political subdivisions may submit other projects involving information technology to the Commission for comment, review, and recommendations;

4.2.6 Adopt minimum technical standards, guidelines, and architectures upon recommendation by the technical panel ~~created in NEB. REV. STAT. §86-1511~~;

4.2.7 Establish ad hoc technical advisory groups to study and make recommendations on specific topics, including work groups to establish, coordinate, and prioritize needs for education, local communities, and state agencies;

4.2.8 Make recommendations on technology investments to the Governor and the Legislature, including a prioritized list of projects, reviewed by the technical panel, for which new or additional funding is requested;

4.2.9 Approve grants from the Community Technology Fund and Government Technology Collaboration Fund; and

4.2.10 Adopt schedules and procedures for reporting needs, priorities, and recommended projects.

5. Council Mission and Responsibilities

5.1 Council Mission

To provide direction and oversight for state government information technology vision, goals and policy.

5.2 Council Responsibilities

5.2.1 Establish, coordinate, and prioritize technology needs for state agencies;

5.2.2 Review and make recommendations to the Commission on requests for funds from the Government Technology Collaboration Fund;

5.2.3 Review and make recommendations to the Commission on agency technology projects requesting new or additional funding as part of the state budget process;

5.2.4 Assist the Commission in developing, reviewing and updating the statewide technology plan;

5.2.5 Recommend planning and project management procedures for state information technology investments;

5.2.6 Evaluate and act upon opportunities to more efficiently and effectively deliver government services through the use of information technology;

5.2.7 Recommend policies, guidelines, and standards for information technology within state government; and

5.2.8 Such other responsibilities as directed by the Commission.

6. Membership

6.1 Number of Members

The Council shall have ~~21~~24 Members.

6.2 Agency Directors or Representatives:

6.2.1 Department of Roads

6.2.2 Department of Motor Vehicles

6.2.3 Department of Revenue

6.2.4 Crime Commission

6.2.5 Department of Health and Human Services - Finance and Support

6.2.6 Department of Administrative Services ("DAS")

6.2.7 Department of Labor

6.2.8 Governor's Policy Research Office

6.2.9 ~~Natural Resources Commission~~Department of Natural Resources

6.2.10 Department of Correctional Services

6.2.11 Department of Environmental Quality

6.2.12 Nebraska State Patrol

6.3 Others

6.3.1 Secretary of State

6.3.2 Chief Information Officer

6.3.3 DAS – IM Services, Administrator

6.3.4 DAS - Division of Communications, Director

6.3.5 State Budget Administrator

6.3.6 State Court Administrator

6.3.7 Workers' Compensation Court Administrator

6.3.8 Department of Education, Administrator for Education Support Services

6.3.9 One additional representative of Non-Code state agencies, to be appointed by the Commission

6.3.10 Two (2) representatives of major private sector information technology users, to be appointed by the Commission

6.4 Others - Nonvoting

6.4.1 Legislative Fiscal Office, Director

7. Meeting Procedures

7.1 Chair

The Chief Information Officer shall serve as the Chair of the Council.

7.2 Quorum and Alternates

An official quorum consists of at least 50% of the voting membership. Each member of the Council may designate one (1) official voting alternate. This official voting alternate shall be registered with the Office of the Chief Information Officer and, in the absence of the official member, have all the privileges as the official member on items of discussion and voting.

7.3 Voting

Issues shall be decided by a majority vote of the voting members present.

7.4 Non-Member Agencies

Attendance and input by non-member state government agencies is encouraged. The director of a non-member agency may submit to the Council the name of a contact person within his or her agency to receive notification of Council meetings.

7.5 Meeting Frequency

The Council shall meet not less than four times per year.

7.6 Notice of Meetings

7.6.1 Notice of the time and place of each meeting of the Council shall be made at least seven (7) calendar days prior to the meeting. Notice shall be published on the Council's World Wide Web page at http://www.nitc.state.ne.us/.

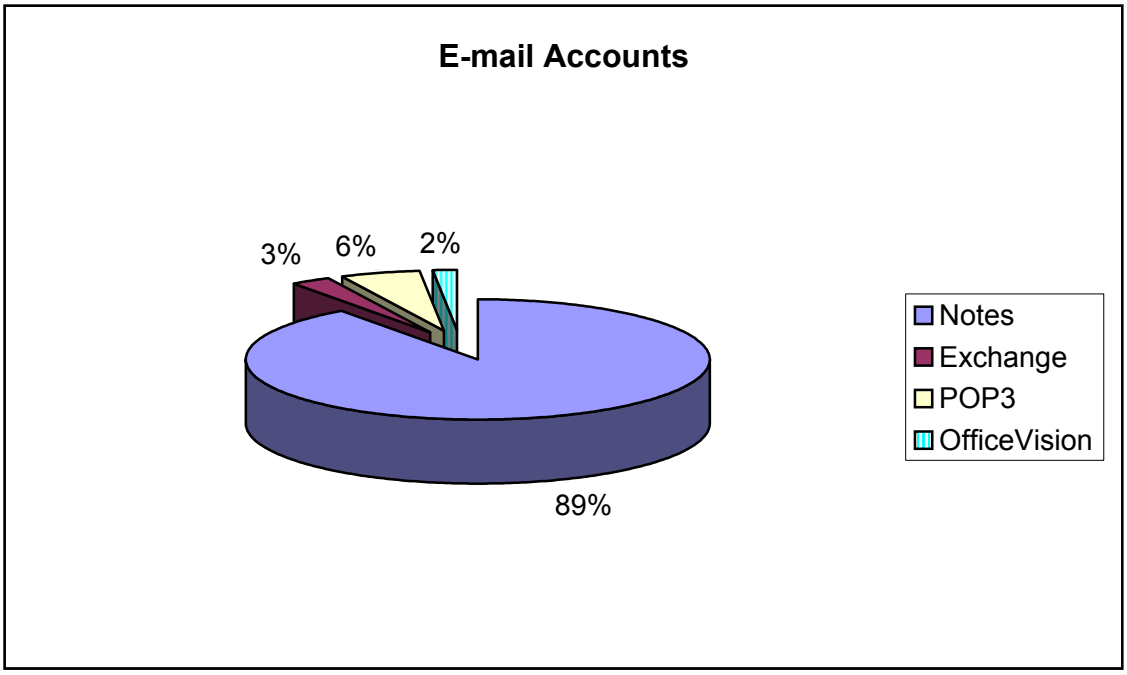
7.6.2 The notice shall contain an agenda of subjects known at the time of the publicized notice or a statement that the agenda shall be readily available for public inspection at the Office of the Chief Information Officer, 521 S. 14th Street, Suite 200, Lincoln, NE, during normal business hours.

7.7 Subcommittees

7.7.1 Subcommittees will be designated by vote of the Council to address specific topics.

7.7.2 Pursuant to provisions of Neb. Rev. Stat. § 84-1409(1), subcommittees of the Council shall not be required to provide notice of meetings.

Approved by the Nebraska Information Technology Commission on June 29, 1999.
Amendments approved by the NITC on June 13, 2001.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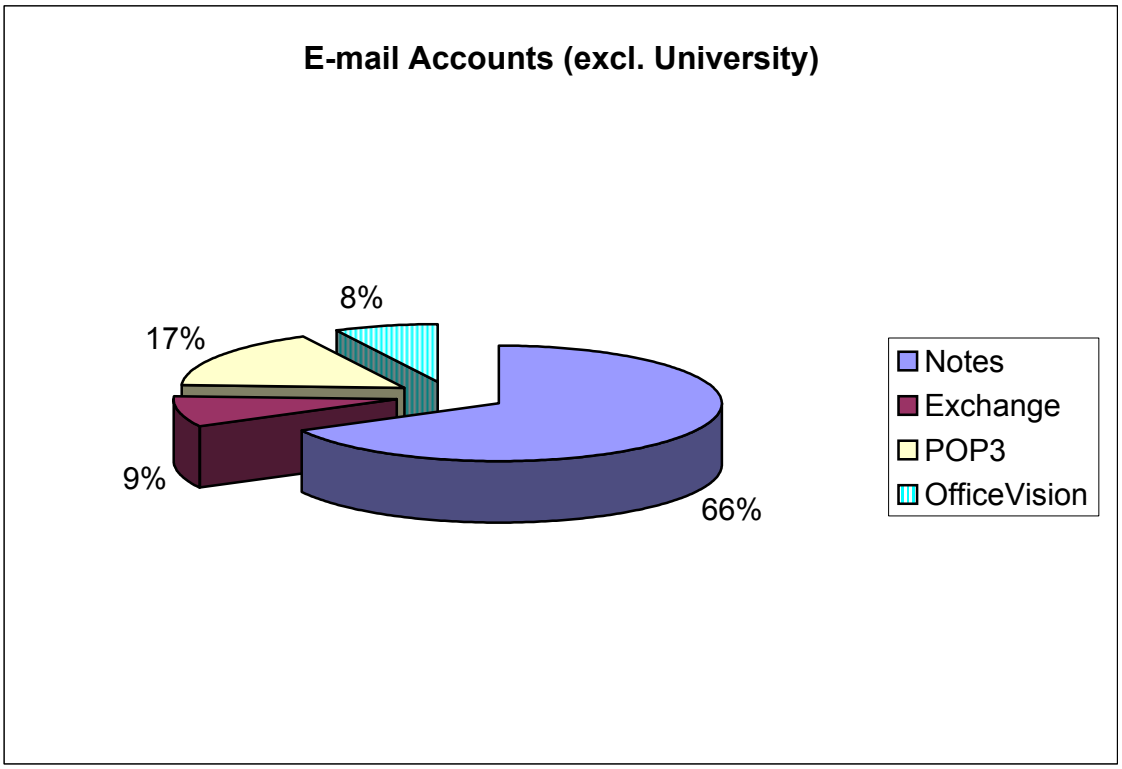
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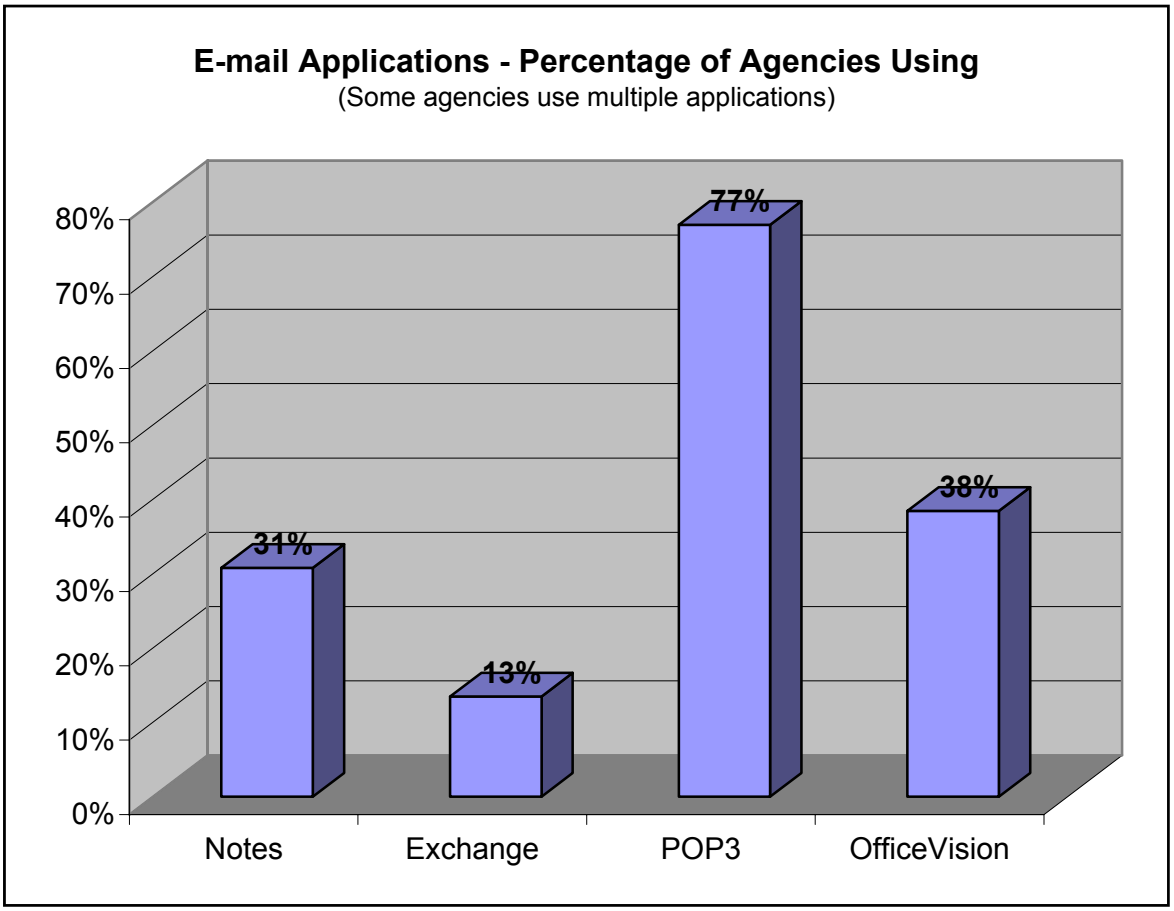
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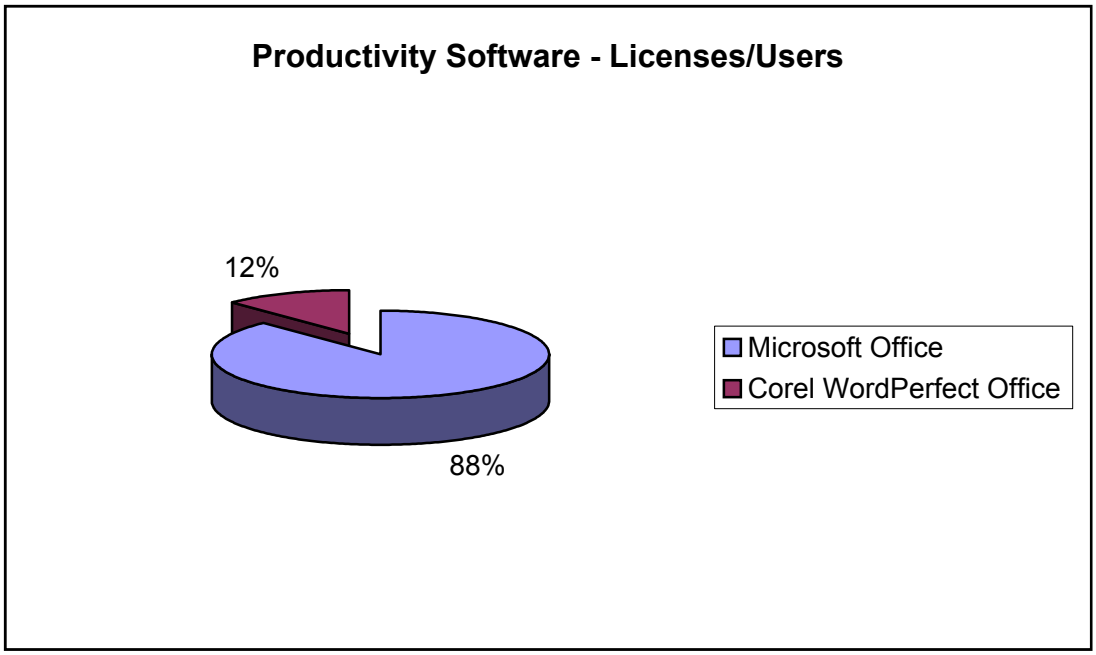
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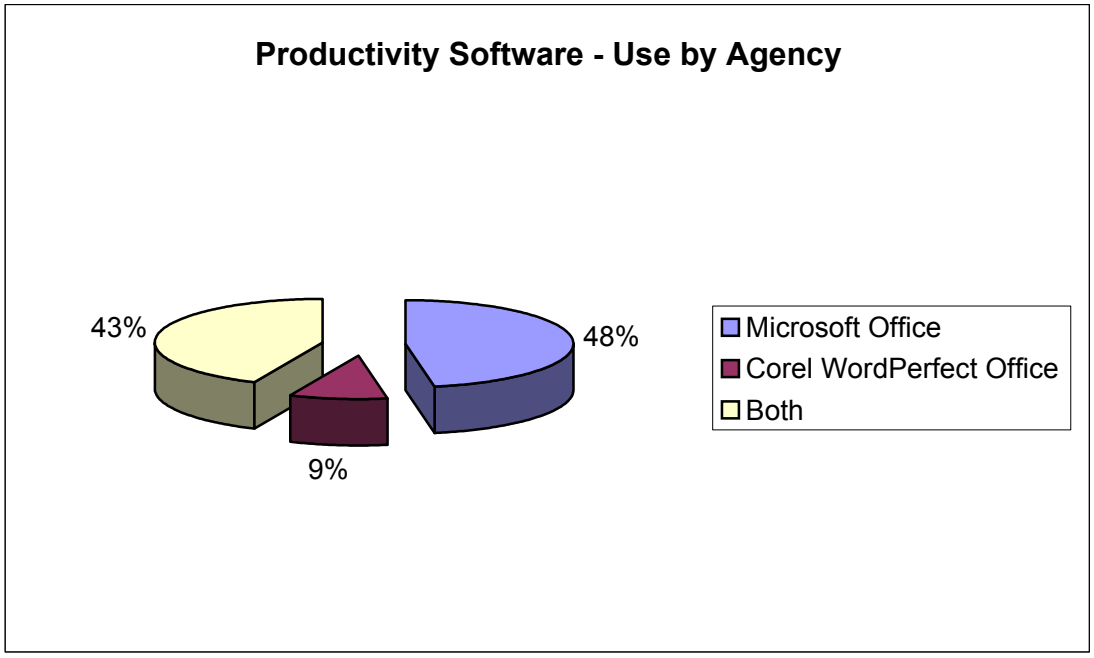
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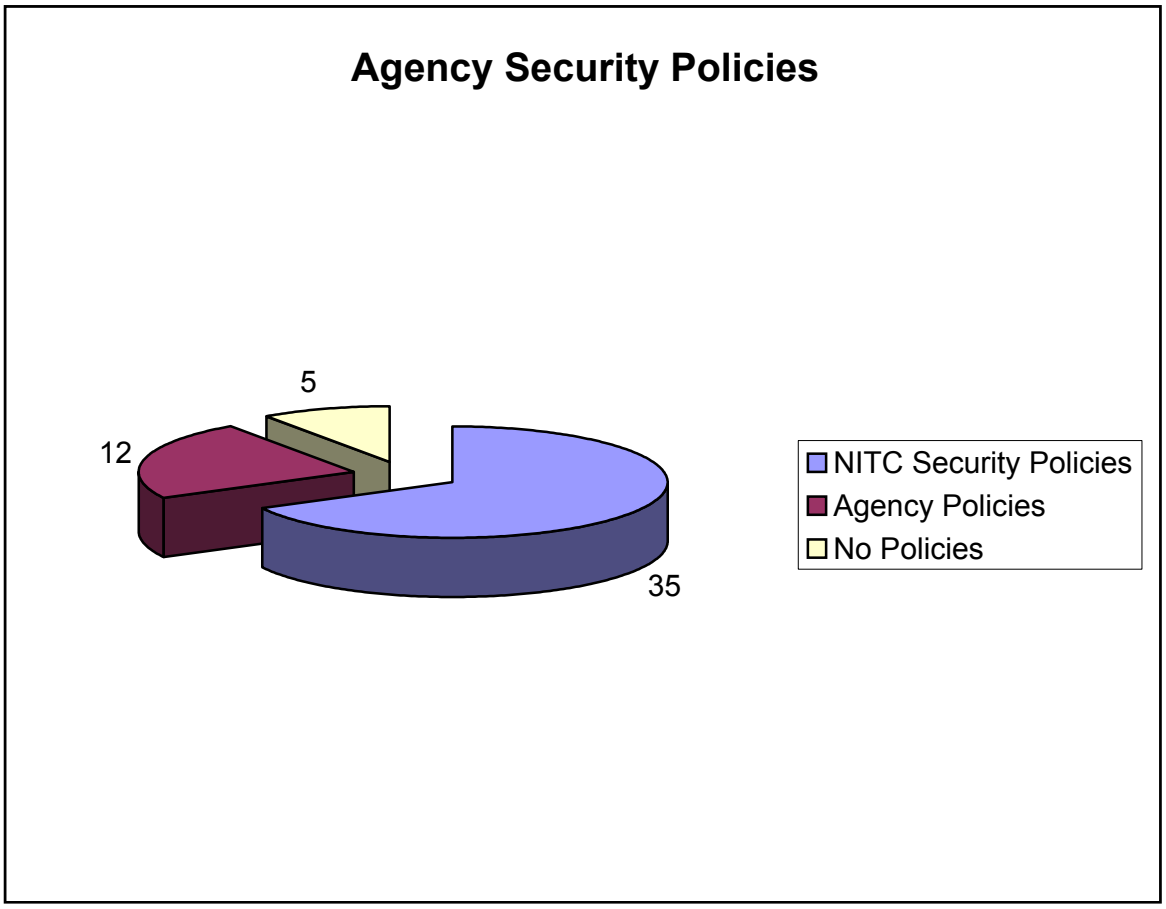

Agency Security Policies
5
12
35
NITC Security Policies
Agency Policies
No Policies

Status Summary of Council Action Items (FY 2003)
(Date of Last Revision: September 2, 2002)

			Planned		
Priority	**Description**	**Lead**	**Start**	**Finish**	**Comments**
	Administrative				
	Agency Tech Plans – review and summaries	Rick / Jen	7/1/02	8/31/02	
	Budget Request for FY2004 / FY2005 Biennium	Steve / Lori	8/8/02	9/1/02	
	Clearinghouse Maintenance	All	Ongoing		
	Community Technology Grant Management	Anne	Ongoing		
	Coordinate with Other Groups (GIS, CJIS, DAS)	Steve	Ongoing		
	Digital States Survey	Rick / Steve	6/1/02	6/28/02	Summary and comparison in November
	Government Tech Collaboration Grant Management	Rick	Ongoing		
	NIS Oversight	Steve	Ongoing		
	NITC.news	All	Ongoing		
	Project Status Reports – semiannual summary	Steve / Jen	6/30/02	7/30/02	
	Reports to the Legislature 1. Prioritized list of projects (Section 86-516) 2. Biennial Progress Report (Section 86-518) 3. Annual Report on ITIF Fund (Section 86-528	All	9/15/02	11/15/02	
	Community Council				
CC 1.1	Technologies Across Nebraska Action Plan				
CC 1.1.1	Prepare inventory of information and Resources	Anne	Mar-02	8/30/02	September Community Council Agenda
CC 1.1.2	Prepare a gap analysis of information and resources	Anne	Jul 02	8/30/02	September Community Council Agenda
CC 1.1.3	Promote information exchange and mentoring among community IT committees (e.g., e-mail lists)	Anne	Ongoing		
CC 1.1.4	Pilot toolkit with 8 communities	Anne	Jun 02	May 03	26 applications received; 8 selected
CC 1.1.5	Develop regional resource teams & regional meetings	Anne	Sep 02	10/31/02	
CC 1.1.6	Plan regional forums	Anne	TBD		Columbus e-commerce forum 8/29; RUS Grant Workshop 9/24

CC 2.1	Telehealth Vision and Strategy		On hold		
CC 3.1	Local Government Toolkit Resources	Anne	Jan 03	May 03	
	Education Council				
	Education Portal	Tom	TBA		Drat Education Portal Architecture presented to Education Council by NOL on 8/16.
EC 1.1	Statewide Video Standard Implementation Plan	Tom	Jul-02	Dec-02	
EC 1.2	Adequate Rural Bandwidth for Education	Tom	Apr-02	Dec-02	
EC 2.1	Recommend Change in Funding for Technology Training Grants			11/15/02	Pursuant to LB 2, NETC terminated funding for technology training grants.
EC 3.1	Life Cycle funding Strategies and Total Cost of Ownership Materials		Oct-02	Mar-03	
EC 4.1	Role of Technology in Standards	Tom	Ongoing		
EC 4.2	Educational Technology Proficiency Measures	Tom	Ongoing		
EC 6.1	Synchronous and Asynchronous Instructional Methods	Tom	Apr-02	Jun-03	U of N demonstration of BlackBoard 5 – Level 3 Course Management Tools Implementation on 8/16/2002.
	State Government Council				
SGC 1.1	E-Government to Business Initiative	Steve / Rick	Ongoing		Signed MOU with NOL
SGC 1.2	E-Government to Employee Initiative	Rick	Jul 02	Sep-02	Proposal on September agenda
SGC 1.3	E-Government to Citizen Initiative	Steve / Rick	Oct 02	Dec-02	Signed MOU with NOL
SGC 2.1	Recommend Technical Standards, Guidelines & Enterprise Solutions 1. Secure e-mail	Rick	Ongoing	8/31/02	Draft guidelines for secure e-mail sent to Tech Panel;
SGC 3.1	Improved Planning Process	Steve / Rick	Apr 03	Jun-03	
SGC 3.2	Improved Project Management	Steve	Apr 03	Jun-03	
SGC 3.3	Communications with Policy Makers		Ongoing		
SGC 4.1	Security Policies	See Tech Panel			
SGC 4.2	Records Retention Project	Rick	Jul 02	Dec-02	Topic on July, August and Sept agendas.
	Technical Panel				

TP 1.1	Provide Technical Support to the NETCOM Project	Brenda Decker			
TP 1.2	Nebraska Telecommunications Infrastructure Review	Steve	Sep-02	Dec-02	
TP 1.3	Identify Types and Levels of Service	Brenda Decker			
TP 2.1	Recommend Technical Standards, Guidelines and Best Practices		Ongoing		
TP 2.1.1	Security Workgroup – Disaster Planning Guidelines	Steve	6/3/02	8/15/02	Draft procedures are near completion
TP 2.2	Coordination of Networks (Nebraska Network Study)	Steve	Feb 02	9/31/02	Final report and recommendations are done.
TP 2.3	Implementation of Critical Elements of the Technical Architecture		Pending		
TP 3.1	Project Reviews (Statutory)		Sep 02	11/15/02	
TP 3.2	Project Reviews (Other)		Ongoing		Review of AET proposal for health alert network at August meeting.
TP 3.3	Revise Procedures for Reviewing IT Purchases by State Agencies		Nov 02	Feb 03	

Nebraska Information Technology Commission

FY2003-05 Biennial Budget Review Timeline

	Task	Due Date	Revised - LB 12
	Project Proposal Forms Due	09/16/2002	10/15
	Assign reviewers	09/17/2002	10/16
	Completed scoring sheets due from reviewers	09/30/2002	10/25
	Compile scores from reviewers. Add scores and reviewer comments to summary sheets	10/02/2002	10/28
	Distribute summary sheets to TP; SGC; and EC members	10/03/2002	10/29
	Technical Panel meeting	10/09/2002	10/30-11/6
	State Government Council meeting	10/10/2002	10/30-11/6
	Education Council meeting	10/18/2002	10/30-11/6
	Community Council review		10/30-11/6
	Distribute prioritized lists from SGC and EC with revised summary sheets to Joint Committee members	10/22/2002	11/7
	Joint Committee meeting	10/23/2002 - 10/30/2002	11/8
	Recommended prioritized list and summary sheets to NITC	10/31/2002	11/8
	NITC meeting	11/13/2002	11/13

Draft
Final Report and Recommendations

Nebraska Network Work Group

Nebraska Information Technology Commission

http://www.nitc.state.ne.us/nitc/network/

Prepared By The

Office of the Nebraska Information Technology Commission

(Date of Last Revision: September 6, 2002)

Draft Final Report and Recommendations
Nebraska Network Work Group

Table of Contents

"Our ability to move information quickly and accurately through electronic means is critical to the success of education, business, agriculture, health care, government, libraries, communities, and other areas of interest in a global society." **(Nebraska Statutes, Section 86- 512)**

Executive Summary

The NITC established the Nebraska Network Work Group in February 2002 "to evaluate the feasibility of the development of a digital network and related support functions to serve education, communities, and state government that could be accomplished through a statewide consortium." Membership on the work group included representatives of higher education, K-12 schools, Education Service Units (ESUs), telehealth providers, libraries, local government, state government and the NITC Technical Panel. Agendas, minutes, and supporting material are available on the website for the work group: http://www.nitc.state.ne.us/nitc/network/.

The work group published an Interim Report dated April 30, 2002, which documented existing networks, reviewed networks in nine states, and presented a set of preliminary findings. A copy of the Interim Report is available on the work group's website.

There are 10 state agencies, plus higher education institutions, that operate nearly 30 statewide or regional networks in Nebraska. These numbers do not include many entities that operate local or campus networks within a small geographic area. In addition to these numbers, eleven regional distance education consortia provide video and data services to more than 240 high schools. More detailed information on existing networks is available on the work group's website.

Taxpayers have invested considerable money for regional and statewide networks serving state agencies, K-12 education, and post-secondary education institutions in Nebraska. A partial survey of several major entities indicates total expenditures of at least $23 million per year for data and video networks. Specific examples include:

- State agencies spend $7.2 million per year on data networks and $130,000 per year for video networks. K-12 spends approximately $6.5 million on telecommunications costs for long distance telephone, Internet service, and connectivity prior to e-rate discounts. Included in this amount is eleven regional distance education consortia spending over $4 million per year to provide video services to more than 240 high schools. The initial investment to build the distance education networks was $17.5 million of state lottery funds, plus some federal funding. The Legislature recently appropriated an additional $3 million of state lottery funds to complete the system to another 45 high schools.
- NETC spends $1.8 million per year on NEBSAT Network 2 and NEBSAT Network 3 satellite systems, which serve a wide range of educational users. The primary use of these systems is course delivery by institutions of higher education, especially community colleges, state colleges, and the University campuses.
- The University of Nebraska budgets $8,000,000 per year for voice, data, and research networks.

Because each regional or statewide network was designed to address a specific need, they insure a high level of responsiveness to their users. They also represent a broad base of technological expertise among the several entities that provide network operations and management.

Despite these important advantages, the current approach to creating networks is fragmented, costly, and sometimes inefficient. There is little opportunity for achieving economies of scale, and establishing new regional or statewide networks is difficult, expensive and time-consuming. Ad-hoc connections serving one-time events are impractical. Completely decentralized operations also lead to very thin levels of technical support, duplication of effort, and incompatible technologies. These problems with networks and network management cause several critical shortcomings:

- Underutilization of networks;
- Less than optimum value from investments;
- Lack of interconnectivity and interoperability, especially among video networks;
- Lack of market power when negotiating for services, and
- Problems staying current with technology.

Other states have created special organizations that provide statewide networking services to educational and other entities. As part of this feasibility study, the Nebraska Network Work Group examined statewide networks in nine states. Of the nine states, three networks (North Dakota, South Dakota, Iowa) are either owned or leased and managed by the state. Three networks (Missouri, Kansas, Indiana) operate as non-profit consortia of higher education entities serving additional partners. Two networks (Colorado, Wyoming) are partnerships between a large-scale provider/manager (Qwest) and are monitored by state government. One network (Oklahoma) is a state-led partnership between state government, education entities, and local telecommunications providers.

Although no single network represents a complete model for Nebraska to follow, their activities provide examples of the types of opportunities that exist with a statewide approach. All networks provide data services, and most support synchronous video courses and video conferencing. Some provide IP (Internet Protocol) telephony services. Data services typically include Internet access, which qualifies for discounted pricing through a single access point. Some states sponsor statewide access to Internet2 for educational entities. Most use IP as the protocol for their network applications. Software running on these networks allows point-to-point connections for synchronous video courses or conferencing without the need for central intervention, and scheduling software is able to differentiate between the priority assigned to scheduled courses, ad hoc events, and impromptu desktop videoconferencing. Other types of network services in these nine states include:

- E-mail for teachers, administrators and students;
- Web hosting for schools, students, and classes;
- A statewide student information system;
- LAN consulting and other technical support;
- Directory services for authentication and security;
- Security operations.

Each of the nine states surveyed for this study has some type of network operations center – some large and some small. Most network organizations offer technical support during the workday, and some provide full 24 x 7 technical assistance. Four of the states file a statewide e-rate application for federal Universal Services Funds to subsidize the K-12 portion of trunk lines (backbone) and access charges.

The work group examined possible uses of a shared statewide network in Nebraska. Some members of the work group cited plans for providing rich content resources for teaching and learning, increasing the level of collaboration among Nebraska's K-12 and higher education communities, and creating a conduit for educators to access tools for using technology effectively in the classroom. Other representatives on the work group are implementing telehealth systems. Future state agency requirements include a health alert network, deploying a digital drivers license system, better communications for homeland security, and the Department of Roads' Intelligent Transportation System (ITS).

The business case for change in Nebraska is summed up by the need for:

- Interoperability of systems providing video courses and conferencing;
- Increased collaboration among all K-20 educational entities;
- New educational opportunities;
- Competitiveness with surrounding states;
- Greater efficiency for participating entities;
- Better utilization of public investments.

The NITC directed the Nebraska Network Work Group "to evaluate the feasibility of the development of a digital network and related support functions…." This charge suggests that a single network serving all of the needs of "education, communities, and state government." might be possible. The work group sees this as a long-term goal. Technical considerations, security needs, practical constraints and even funding restrictions may preclude a single shared network from serving all potential participants, at least initially. In particular, network managers responsible for critical applications that operate in a stable production environment are unlikely to surrender control, unless there is a guaranteed level of service and security. The sophisticated technology necessary to manage quality of service is expensive. It would also be a fiscal hardship for all existing networks to shift immediately to a single shared network, given current incompatible equipment and long-term contracts for telecommunications services.

A more rational approach, especially for the short and mid-term, is to begin sharing a network for certain types of applications or communities of interest. In particular, the education sector is furthest along in recognizing the need for greater collaboration and the benefits of a shared network that links them together. Libraries also have a mission that makes them logical participants of a shared education network. Certain education institutions, health care providers, and community promoters (who recognize the importance of access to health care) have an interest in developing telehealth networks, which may need to interconnect to other synchronous video networks. The federal government has mandated that each state create a health alert network, which may overlap with portions of a larger shared network.

A single shared network is not essential to achieving major benefits. It is enough if individual networks are managed in a way that is consistent with a statewide vision and strategy for the future. In particular, significant aggregation of bandwidth can occur, even if some networks continue to operate on circuits that are carefully segregated. Greater interoperability is also feasible, while building on existing investments.

The NITC has begun to articulate a vision and strategy for networks in Nebraska. It sponsored the initial TINA study and endorsed an effort to aggregate telecommunications purchasing and bandwidth. In February 2002, the NITC adopted the Technical Panel's recommendation for video and audio standards.

The Nebraska Network Work Group makes several recommendations to the NITC, which would expand on these past efforts. The recommendations are intended to be feasible and practical steps that recognize current fiscal realities. Some of the recommendations include:

- Adopt a vision statement that calls upon all entities to work together to achieve " an efficient, reliable, and scalable telecommunications infrastructure, widespread communications networks, and sufficient network support functions."
- Promote statewide purchasing and bandwidth aggregation of telecommunications services.
- Implement a telecommunications backbone (core routing network).
- Implement an IP-centric intranet to improve K-20 collaboration and to serve other participants.
- Determine the best option for providing interconnection of synchronous video networks.
- Decide a long-term strategy for network management and support services.

Recommendations

Vision

1. The NITC should adopt and communicate the vision for telecommunications networks serving the state. A proposed vision statement is below:

   Government, educational institutions, public purpose entities, and the private sector should work together to insure that Nebraska has an efficient, reliable, and scalable telecommunications infrastructure, widespread communications networks and sufficient network support functions.

Statewide Purchasing and Bandwidth Aggregation

2. All state agencies, educational institutions, and political subdivisions that manage regional and statewide networks should aggregate their acquisition of telecommunications services, by using a centralized telecommunications purchasing entity. The initial focus should be on data and video services, but should not exclude cooperation on other telecommunications services, if beneficial to participants. Aggregation of demand is essential, in order to achieve competitive pricing, provide standardization, increase quality of service, and orchestrate network improvements. Initial participation in aggregation efforts should focus on those entities ready and willing to commit in the near term to a provider selection process. In the long term, broader participation will generate greater benefits for all involved. This recommendation recognizes that statutorily independent entities must be able to document advantages of participation to governing boards. These advantages include potential economies of scale, greater interoperability, and the opportunity for widespread collaboration. This recommendation proposes a relationship with the central telecommunications purchasing entity that permits solicitation of pricing by individual participants, even though all contracts should be held by the central telecommunications purchasing entity for the benefit of all.
3. The Nebraska Division of Communications (DOC) should be the central telecommunications purchasing entity for purposes of aggregating demand. The DOC is best positioned to serve this function, because it has existing statutory authority to serve all public entities and because several state-led initiatives will create opportunities for leveraging future expenditures on telecommunications.

Telecommunications Backbone Concept (Core Routing Network)

4. The Technical Panel's Network Architecture Work Group, sponsored by the Division of Communications, should design the technical requirements for a common network backbone serving all users. The first attempt, NETCOM Request For Proposal (RFP), did not result in a contract award. A revised strategy for aggregated purchasing is planned. At a generic level, it will encompass core aggregation points in the state, but not to the degree as contained in the original proposal. These sites will be interconnected via high capacity links to strategically-located intelligent devices that will provide the appropriate routing, management, service levels, destination identification, and other high level telecommunications services associated with network operations. There will be other locations that will be points of aggregation, but not necessarily part of the core routing network. These sites will also not approach the number or magnitude as originally proposed. It is anticipated that with the appropriate support and encouragement, this second effort will be distributed prior to the end of calendar year 2002.
5. The central telecommunications purchasing entity (DOC) will work with all qualified vendors (pursuant to Section 81-1120.19) to implement a core routing network in an acceptable economical manner that meets the technical design specifications.

Network Application Layers

6. K-12 entities, higher education institutions, and other interested parties should begin planning a shared Nebraska statewide IP-centric intranet to meet existing needs and provide a scalable path for future growth. Participation should be focused initially on those operational entities that can contribute monetary or operational resources, but the design should accommodate future expansion and the potential needs of non-educational entities with closely related interests including libraries and telehealth systems. As a practical matter, the primary goal initially is to provide connectivity among all educational entities.
7. Some communities of interest may have additional requirements that are best served by network application layers that are isolated from other networks, although all would benefit from using the same core routing network (backbone). For example, a shared IP-centric intranet may not meet some of the requirements of state agencies. Operational entities for these communities of interest should collaborate in planning the technical requirements, network management, quality assurance and security needs.

Governance

8. The Technical Panel of the NITC should assume the lead role in recommending network policies, standards, and guidelines. The Technical Panel of the NITC should establish work groups as needed to facilitate coordination of different network activities. The Technical Panel should sponsor a work group to address Recommendation 12 regarding a Nebraska statewide synchronous video network.
9. Under the auspices of the NITC, an interim work group composed of stakeholders should coordinate implementation of a shared Nebraska statewide IP-centric network (Recommendation 6). The work group should include stakeholders, with some representation of the Community Council, Education Council, and State Government Council. The work group should address technical requirements, network management, quality assurance and security needs.
10. Long-term functions of the network and a mechanism for constituent input could be delivered in a variety of ways. Issues to be decided include funding strategies, pricing and services to be offered, resolving technical problems, and establishing service levels. Funding options should encourage collaborative mechanisms for multiple independent entities to use existing resources as well as other available sources. The interim work group would research the advantages and disadvantages of different models and make a detailed recommendation to the NITC.

    a. Distributed Model

    Stakeholders would divide up the tasks of running the network and applications and share responsibilities using existing staff and resources. The group would meet as needed to resolve differences and reach consensus on future service changes. Each participant in the network would deal with the purchasing entity individually.

    b. Centralized Model

    Stakeholders would designate a central entity to support the network and applications. The central entity would make decisions on behalf of the stakeholders and solicit input when needed. The central entity would be an existing state agency or educational institution and would be responsible for interacting with the purchasing entity.

    c. Cooperative Model

    Stakeholders would form a group under 501(c)3 and/or the Interlocal Cooperation Agreement Act that would be the oversight group for the management of the network and implementation of multi-jurisdictional applications. The resulting collaborative would receive oversight by a stakeholder board and have the ability to enter into purchasing agreements with application providers, purchase telecommunications services from the purchasing entity and other providers, and hire staff.

11. Entities that operate regional or statewide networks, in addition to aggregating demand through the central telecommunications purchasing entity, should coordinate future network plans with the Technical Panel.

Possible Value-Added Services (list of options)

12. The Technical Panel, as a continued extension of its video standards activity, should establish an implementation work group to determine how to provide a Nebraska Statewide Synchronous Video Network. The network should incorporate the facilities of K-12 interactive distance learning consortia, higher education, telehealth, National Guard video network, and the Nebraska Video Conferencing Network (NVCN). The work group should include representation of the Community Council, Education Council, State Government Council and affected entities. It should define the technical requirements for interconnecting all synchronous video networks and meeting the scheduling needs of different participants. Issues to be addressed should include business case, scheduling, traffic prioritization, security, quality assurance, cost-sharing, and existing contractual arrangements of regional networks. Specific steps might include:
    a. Create a working group to continue the activities of the Video Standards Work Group to prepare an implementation plan for adherence to the new video/audio standards;
    b. Conduct informative and working sessions to determine the needs, issues, and participants regarding interoperability within and outside the state;
    c. Encourage participants to improve educational opportunities in the state via continued evolving video distance education;
    d. Identify a "core sponsor" for video distance education in the state that will be the focal point to coordinate all of the activities associated with enhancement of services and interrelationships that will be critical for continued success;
    e. Evaluate options for providing support services.
13. The Education Council should evaluate, recommend and prioritize possible value-added services that would utilize the Nebraska statewide IP-centric intranet. A list of options includes, but is not limited to:
    a. Combine Internet 1 traffic for block purchasing, as part of the aggregated purchase of telecommunications services.
    b. Offer consolidation of statewide services such as e-mail, caching servers, streaming video, active directories, intrusion detection, filtering, and disaster recovery.
    c. Offer aggregation, group purchase, and serving of electronic datasets for K-12 schools, higher education and public libraries.
    d. Coordinate application to UCAID (Internet 2) enabling all Nebraska K-12 and private/public higher education institutions to become Sponsored Education Group Participants (SEGP) for advanced Internet 2 applications.
    e. Offer a statewide e-rate application for all telecommunications services provided to K-12, libraries, and telehealth.
    f. Provide cooperative purchasing and serving of course management tools such as Blackboard or WebCT for K-12 and Higher education.
    g. Provide technical support and consulting for digital content development and synchronous/asynchronous video delivery from informal education entities such as the Homestead Monument, Edgerton Explorit Center, University of Nebraska State Museum, Henry Doorly Zoo, Ashfall Fossil Beds, Smithsonian Institution, and other locations.
    h. Provide security functions, such as directory services for authentication and authorization.

Fiscal Impact

Fiscal impact is difficult to determine because of the critical differences in performance and operational requirements among the existing networks, the wide range of options and the large number of entities affected. Some of the recommendations are still at a high level, without sufficient detail for accurate cost estimates. The organization of this fiscal impact assessment is centered on specific recommendations. Total fiscal impact depends on whether the recommendations are implemented.

- Statewide aggregation of telecommunications demand. In theory, this recommendation should allow for potential economies of scale and where applicable, future cost avoidance. The aggregation concept is not unique to Nebraska. States that have implemented similar solutions have seen cost savings as high as 20%, based on information gathered by the Telecommunications Information Needs Assessment (TINA) study. Efforts to aggregate telecommunications in Nebraska have shown mixed results in terms of realizing any savings. Another consideration is that implementing advanced technologies and establishing a network operations center have the potential to make use of any savings from aggregation.
- Purchasing processes. Administrative functions such as order taking, billing, and problem resolution may require additional staff and support costs depending upon the volume and whether the telecommunications industry provides these functions.
- Backbone (Core Routing Network). The cost of developing the core routing network will depend on bandwidth, number of core aggregation points, and other technical requirements. Until the revised aggregated purchasing request is distributed and the subsequent proposals are submitted, it is not possible to estimate potential economies of scale for a statewide core infrastructure. Some extenuating circumstances affecting such a network would be: level of service; locations of core aggregation points for both the core network and the ingress sites; the number of interconnection links and bandwidth demand at the various local access points; the ability of the service provider(s) to accommodate ubiquitous access for identified participants; capability for seamless interconnections across individual companies' operating areas; the ability for a centralized entity to exercise control of and operate/manage the network while at the same time negotiate for and obtain stabilized service rates over a mutually acceptable period of time. The exact time frame for the remaining network design, development of the aggregation strategy, and the appropriate time for telecommunications providers' responses has not been determined.
- Network Management. Capacity management, load balancing, quality assurance, network problem resolution, and other technical network support functions are activities associated with a network operations center. Currently, there are multiple centers located in various participants' locations across the state. It is desirable to suggest that a working group established under the guidance of the Technical Panel analyze and assess the needs of all of these centers and initiate activity related to the establishment of a coordinated effort involving backup procedures for emergency activation if needed. These functions may require additional staff and specialized equipment. Responses to the first NETCOM RFP provided some estimates of setting up a network operations center. The work group of the Technical Panel should develop cost estimates as it prepares different options and recommendations for a long-term solution for network support functions. A closely related issue is defining a division of labor between a central network operations center and existing entities that provide network support services. Costs of network management would be included in the rate structure for telecommunications services.
- The Education Council should analyze the fiscal impact, determine priorities, and identify funding options of possible value-added services that would benefit educational entities.

Funding Model

A charge-back system appears to be the only feasible funding model, because it allows participants to tap the full range of potential funding sources. Under the current fiscal conditions of the state, redirecting existing expenditures on telecommunications circuits and services appears to be the most prudent source of funding to be used for implementing the core routing network. This would include all funding sources that are currently tapped for paying telecommunications bills, such as general funds, cash funds, federal grants, local tax funds, state aid amounts, and e-rate reimbursements. Users should also pay for any value-added services that are not shared by all participants. Potential cost savings or cost avoidance may occur through more aggressive volume purchasing of Internet 1 service.

Rates charged to participants must meet federal, state and local rules, regulations and statutes for cost allocation. K-12 and libraries presently qualify for e-rate discounts of about 60% through the federal Universal Service Fund. Close attention to USF regulations is essential in order for eligible entities to continue receiving this benefit.

There are several major state and federal initiatives that will stimulate overall spending on telecommunications networks in the near future. The Public Safety Wireless system, Homeland Security, the Health Alert Network, Intelligent Transportation System, and the National Guard video network are examples of projects currently being discussed or planned that will significantly increase public spending on networks. If combined with existing spending, these projects have the potential to provide the justification and possible business case for investments in equipment upgrades by private telecommunications companies.

The Nebraska Universal Service Fund (NUSF) is another potential source of funding for selected elements of network improvements that would promote the goal of universal service. The NUSF's primary goal is to maintain affordable basic telephone service for all Nebraskans. The NUSF, by statute, can only provide support to eligible telecommunications carriers. It does not currently provide direct support to schools, libraries, health care providers, or the State. It may be possible to identify certain participants or components of an overall project that would be eligible for NUSF support, based on existing statutory policy governing the eligible uses of the fund (Section 86-323). Statutory restrictions, competition for funds and regulations, and priorities of the Public Service Commission will affect the viability of this source of funding for network improvements.

In addition, there may be other federal funding sources that could be accessed. Aggregating bandwidth, having a well-defined core routing network architecture, and demonstrating collaboration and integration of regional and statewide networks should strengthen any application for federal funds. Federal funding sources that have been used in the past include USDA Rural Utilities Services and Federal Star Schools programs. The recent Elementary and Secondary Education Act (No Child Left Behind) may be another potential source of funding.

Having well developed plans for a core routing network, a statewide IP-centric Intranet, a statewide synchronous video network, or other shared regional or statewide networks, should increase the chances for tapping these external funding sources.

Business Case

Statutory Mandate

The statutes that created the NITC mandate that "It shall be the policy of the state to:" …"(b) Stimulate the demand to encourage and enable long-term infrastructure innovation and improvement; and (c) Organize technology planning in new ways to aggregate demand, reduce costs, and create support networks." (Section 86- 524) In another section, the Legislature declared its intention for "the State of Nebraska to support the development of a unified statewide telecommunications infrastructure. The Statewide telecommunications infrastructure will be scalable, reliable, and efficient." (Section 86- 513 (2)).

The recommendations in this report will help to achieve these statutory directives.

Growing Public Investments in Networks

State government spends approximately $7.2 million per year on data and video networks. The University of Nebraska spends approximately $8 million per year on data, research, and video networks. NETC spends $1.8 million per year on the NEBSAT2 and NEBSAT3 satellite systems, which provide synchronous and broadcast video connections to higher educations. K-12 education spends over $6.5 million per year on Internet, telephone, and video services. Spending on data and video networks by local government, libraries, hospitals, and private education institutions will add to these figures.

These amounts are increasing steadily, and will continue to grow with several new state and federal initiatives. These include a Health Alert Network, Homeland Security, Public Safety Wireless System, and Intelligent Highway System. The Department of Motor Vehicles recently awarded a five-year contract for the development of a digital driver's license system. Eventually this will translate into significant bandwidth requirements when creating the images and when retrieving them for law enforcement and other purposes. The Department of Education envisions a need to interconnect existing K-12 Distance Learning Networks. The Military Department is deploying a video and data network that connects many of its facilities across the state. The University of Nebraska must increase the capacity of its networks to meet the educational requirements of its campuses. Improved statewide networking has been a priority in all NU integrated technology plans since 1996.

Current Problems

The existing approach to developing and managing communications networks across existing governmental entities falls short of the legislative mandate to aggregate demand, encourage innovation, achieve efficiency, and develop a unified and scalable telecommunications infrastructure.

Existing networks are fragmented, costly, and sometimes inefficient. There is little opportunity for achieving economies of scale. Establishing new regional or statewide networks is difficult, expensive and time-consuming, because they require n-1 long distance circuits to link all of the participating entities (where n = number of locations). Ad-hoc connections to serve a one-time event are impractical. Completely decentralized operations also lead to very thin levels of technical support, duplication of effort, and incompatible technologies. These problems with networks and network management cause several critical shortcomings:

- Underutilization of networks;
- Less than optimum value from investments;
- Lack of interconnectivity and interoperability, especially among video networks;
- Lack of market power when negotiating for services, and

- Problems staying current with technology.

In the past, state government and educational entities pursued an ad hoc approach to building networks. The need for a network would arise from a single sponsor with a specific application. Examples include the Nebraska law enforcement network connecting local sheriffs and police departments to the State Patrol's databases, the county automation network providing state applications to county offices, regional distance education consortia, the state's extensive satellite system for distance education, and the University's network connecting different campuses and county extension offices. Each application would determine the points to be connected, capacity requirements, and sometimes the technology that would be used.

The distance learning consortia are an example of the formidable barriers to creating a statewide system. The 12 distance learning consortia came into existence in the 1990's through the initiative of local school districts, which formed interlocal cooperation agreements that enabled the newly formed entities to sign long-term video service contracts with telecommunications providers. Because no state video standard existed at the time of their formation, the 12 consortia have chosen at least four different video protocols to serve interactive courses to students. Although a state video standard is now in place, there is no implementation plan to achieve interconnectivity.

Even today, most of the consortia are at a disadvantage when negotiating new contracts for services. For example, on the advice of its provider, one consortium is installing expensive "gateways" to insure interoperability within its membership, rather than choosing a cheaper alternative. Multiple contracting entities also impede achieving any economies of scale, and staggered contract terms will complicate future efforts to implement the state's video standard and achieve a statewide interoperable video system.

Expected Benefits

1. Interoperability. One of the primary goals of the Nebraska Network Work Group was to achieve statewide interoperability of synchronous video networks. This implied a system that would enable all of Nebraska's video facilities and classrooms to "talk" to one another. Currently, the interactive video facilities in Nebraska are divided among 12 separate K-12 consortia (using four different video protocols) that do some partnering with their local community colleges; the Nebraska Video Conference Network that serves over 20 sites across the state, owned by the Division of Communications and operated by Nebraska Educational Telecommunications; satellite Network 3, an interactive video system serving over 20 sites across the state with uplink/downlink capabilities; and the Nebraska Guard Network, a network of several video installations serving the larger armories in Nebraska.

   Additionally, health care institutions have several video networks for patient encounters and professional consulting. Statewide, desktop video-over-IP systems have begun to proliferate as camera/cart systems have become more affordable.

   Implementation of a Nebraska statewide synchronous video network would make it technically feasible to unite these disparate video systems into a single, interoperable system while respecting the local control of the video facilities. The benefits would be greater use of an already sizable state investment, capacity to serve new educational and health alert applications, and the ability to schedule and transmit video across the artificial geographic barriers that now exist.

2. K-20 Collaboration. By seamlessly linking data and video to all 500+ school districts with the 27 higher education institutions in the state, new educational opportunities can emerge with regard to synchronous and asynchronous distance learning, collaborative research and training activities, and digital content development. Nebraska Educational Telecommunications is helping lead a new national initiative to make educational resources available to educational institutions through terrestrial and satellite networks. A Nebraska statewide IP-centric Intranet serving K-20 educational entities also affords portal strategies and administrative computing that would not be able to take place otherwise.

3. New Educational Opportunities.
   a. Multifaceted Learning Supported. Successful teachers generally use a wide variety of approaches and materials to meet the diverse learning needs of their students. One student, for example, might come to an understanding of graphing equations by using pencil and paper to plot data points from a real-world experiment. Another might need to experiment with a computerized graphing tool, manipulating the graph's shape and observing how the accompanying equation changes. Still other students will have "aha" experiences only after watching narrated videos illustrating real-world applications of equations. With live video broadcasts and advanced technology, supported by higher bandwidth, it would be possible for a moderator to lead a discussion with participating classes, zooming in on different classrooms so students could demonstrate their solutions for others to see.
   b. Virtual labs and classes. We don't always have enough students in any one location to hold a class, we want to simulate the language labs that can be offered on-site and make them accessible to students from many different places. Virtual labs will typically have student workstations and a console that allows the professor to send assignments to groups of students, check in on them and post any group's work for others to see. In this virtual configuration, students can be grouped with peers across the state and on other campuses, using microphones and headsets to converse together.
   c. Use of mentors and consultants. Whether students are participating in virtual classes or one-time events online, the new technology offers an unprecedented opportunity to bring outside experts to the classroom. An engineer might visit virtually and show how his or her team uses surveying tools and geometry skills on a road construction project. Or students might connect with a biology professor who demonstrates the use of an electron microscope to answer their scientific questions. Virtual collaborations of this sort can make a tremendous difference for students with special needs. Help with homework at home is also possible with this network in place.
   d. Life long learning and research. Clearly, the skills needed by students today go far beyond those measurable by conventional tests. The CEO Forum (www.ceoforum.org), consisting of CEOs and directors of 22 high-tech companies, made the following points in their 2001 Report, Key Building Blocks for Student Achievement in the 21st Century: "In the rapidly changing economy, there is a corresponding shift in the skills and abilities that students will need to thrive in the future. These twenty-first century skills include digital literacy, inventive thinking, effective communication, teamwork and the ability to create high-quality products." Next generation Internet technology can help students acquire these skills and become important contributors to a global knowledge community.
   e. Collaboration on line. Ever since the Internet reached K-12 classrooms, teachers have been finding ways to involve their students in projects that have them collaborating with peers in faraway places. Examples include "quests" in which students participate virtually in real-world expeditions, and data collection projects that involve classrooms all over the globe sharing information such as pollution readings or sightings of migrating animals. Bandwidth limitations have often caused such experiences to be asynchronous and text-based; reports are

posted at a Web site for others to access at a later time. Realistic multiple-point video, supported by high bandwidth, will make it far easier for the participants to see, hear and take part in the adventure in a realistic way. Another collaboration example comes from an Internet2 project in which musicians at many locations come together to play music as part of a virtual orchestra. (This was recently done at the University of Nebraska at Omaha.)

f. Access to services across state lines. Opportunities for aggregation and collaboration extend beyond Nebraska's borders. Participation in multi-state purchasing consortia, joining Internet 2, and access to special video classes are examples of collaboration that would extend beyond Nebraska.

4. Competitiveness. Through national educational technology and networking conferences it has been discovered that no fewer than 28 states have developed and deployed statewide networks serving data and video, and in some cases voice service. This has enabled these states' educational systems to make application for Internet 2 (high bandwidth research network), create enterprise video systems serving diverse communities of interest, and to create multi-state digital and collaborative educational opportunities for their learners. As their schools and universities are discussing future Internet Protocol (IP) dialing schemes to unite learners with educational opportunities across the globe, Nebraska is wrestling with the best way to interconnect its own local video systems.

5. Greater Efficiency. Aggregation of the bandwidth demand in strategically located core routing network sites across the state and the resulting negotiations with the provider(s) could result in beneficial economies of scale for the collaborative participants. The extent of any potential benefits (performance, availability, costs, etc.) of this deployment is not available now.

   Deploying the core routing network will initiate the creation of the telecommunications foundation for the applications (beyond the physical and data link layers of the OSI model) currently contemplated by the Nebraska Network Work Group. It is intended this statewide core routing network will provide telecommunications bandwidth for a statewide IP-centric Intranet, a statewide synchronous video network, other shared regional or statewide networks, and single application networks. The core routing network will help to achieve ubiquitous service levels, improved network performance, and better access availability. It is anticipated the design will be neither dictatorial nor restrictive in its concept and anticipated results. It is expected the revised purchasing and aggregation strategy will be flexible and acceptable to all involved parties—participants and proposed service providers. It is intended to meet the requirements of flexibility, scalability, and providing economies of scale.

6. Better Utilization of Investments. As documented elsewhere in this report, public entities in Nebraska already operate many regional and statewide networks that represent significant investment of public funds. Implementing the work group's recommendations will general additional value from these investments. The proposed statewide IP-centric Intranet will permit greater collaboration and new educational opportunities for participating entities. The proposed statewide synchronous video network will expand the opportunity for shared classes and special events for participating entities.

Risk Analysis

The total amount of risk associated with a shared network compared to a number of independently managed, single-application networks will likely increase due to the complexity of the network and the interrelated and interdependent data transmission. Some of the risks to be considered during implementation are highlighted below.

Expected Risks

1. Confidentiality of Patient and Student Information. Care must be taken to keep patient medical records and student data confidential and secure while new network applications are being implemented on the network. Authenticated users will expect a high degree of privacy.
2. Security. The network must ensure a secure environment for educational and health care-related applications. The ability of the network to serve many thousands of diverse users with many different skill levels will be both a strength and a weakness. The management of the IP-centric shared network must take steps to ensure full compliance with the network security policies of the NITC Technical Panel Security Architecture Work Group: http://nitc.nol.org/tp/workgroups/security/index.htm. Accomplishing individual authentication, verification, and validation will be challenging.
3. Redundancy. The network must ensure virtual or physical redundancy for critical applications such as radiological and surgical health care consultations as well as educational course offerings.
4. Quality of Service. Having a shared network means that users and applications will occasionally compete for network resources. Maintaining satisfactory qualities of service will be paramount. Management will have to set thresholds of quality commensurate with respective costs for its users. The network operations center(s) will have to constantly monitor levels of use and recommend network upgrades and repairs as needed.
5. Financial. Having a shared network means that stakeholders will be sharing the costs of the network infrastructure, management and operations. The financial risk of any paying participant not being able to meet their obligation increases in times of economic uncertainty.
6. Costs of Temporary Duplicative Networks. During the implementation phase of the IP-centric, shared network, some parallel or duplicative networks may have to persist in order to live out the contract terms and avoid penalty fees. This will introduce additional financial risk to the stakeholders having to maintain duplicate telecommunications costs.

Conclusion -- Feasibility

The assignment given to the Nebraska Network Work Group was to evaluate the feasibility of a digital network and related support functions serving a wide range of participants. As noted elsewhere in this report, the concept of a single network is a long-term prospect that builds on past efforts to set strategic direction for networks in Nebraska. Those efforts have included adopting video standards and a plan to aggregate telecommunications purchasing and bandwidth. This report recommends additional specific steps to generate greater value from the state's investments in networks.

The work group recognizes the need for significant changes and recommends a phased approach that starts with aggregation of contracts for telecommunication services and creation of initial segments of the core routing network (statewide telecommunications backbone concept). Greater collaboration among entities with closely similar missions may lead to some sharing of resources for the network application layers as well. Although harder and longer to implement than making a major initial investment in a network operations center and statewide backbone, this approach entails less financial risk and relies on existing resources. Avoiding the need for an initial influx of funding has considerable appeal, given the current fiscal environment. Other funding sources discussed elsewhere in this report might be available to help accelerate the rate of implementation. It is essential that sufficient analysis be in place to provide strategic direction and support proposals for funding. In particular, the following steps are needed:

- Adopt a vision statement that calls upon all entities to work together to achieve " an efficient, reliable, and scalable telecommunications infrastructure, widespread communications networks, and sufficient network support functions."
- Promote statewide purchasing and bandwidth aggregation of telecommunications services.
- Implement a telecommunications backbone (core routing network).
- Implement an IP-centric intranet to improve K-20 collaboration and to serve other participants.
- Determine the best option for providing interconnection of synchronous video networks.
- Decide a long-term strategy for network management and support services.

Appendix

A. Glossary of Terms

1. NETCOM. NETCOM is defined as the NEbraska TeleCOMmunications project, frequently referred to as the NETCOM RFP. This request for proposal, circulated in August 2001 with the State subsequently rejecting all bids in October 2001, was designed to accomplish the following objectives:
   - To reduce voice, data and video communication costs of state government, or to provide economies of scale where appropriate;
   - To position the state to take advantage of rapidly emerging communications technologies;
   - To provide an information infrastructure to support governmental, educational and economic development initiatives throughout the state;
   - To establish opportunities for use by other government, education, political subdivision and non-profit units;
   - To attempt to leverage the State's purchasing power to create economic development incentives for rural and disadvantaged users;
   - To address the rate disparity for network and service access throughout the state.

2. Network Concepts
   a. Core Routing Network. The Core Routing Network is defined as the core infrastructure or "backbone" from which all local access circuits emanate. For Nebraska, this is generally described as a an interconnected "loop" design network geographically encompassing the State, which would strategically identify network interface sites closer to the end-user customer(s).
   b. Health Alert Network. The Health Alert Network is generally defined as the aggregate of telecommunications systems used to accomplish high-bandwidth exchange of information to accomplish rapid response notification, training, and data collection among health and public safety facilities and personnel.
   c. Intelligent Transportation System (ITS). The umbrella term for advanced automation in mobile vehicles. The ITS Data Bus enables engine diagnostic equipment, GPS navigation systems, wireless phones, radios, TVs, games and other mobile devices to interoperate over a standard bus.
   d. Nebraska Statewide IP-Centric Intranet . The IP-centric Intranet is envisioned as a singular Intranet dedicated to the purpose of advancing Internet Protocol (IP) applications such as desktop video, data mining, and e-mail. TCP/IP is a communications protocol developed under contract from the U.S. Department of Defense to inter-network dissimilar systems. This de facto UNIX standard is the protocol of the Internet and has become the global standard for communications. TCP/IP is a routable protocol, and the IP part of TCP/IP provides this capability. In a routable protocol, all messages contain not only the address of the destination station, but also the address of a destination network. This allows TCP/IP messages to be sent to multiple networks (subnets) within an organization or around the world, hence its use in the worldwide Internet
   e. Nebraska Statewide Synchronous Video Network. The Statewide Synchronous Video Network is envisioned as an interconnected system of smaller synchronous video networks that allows web-based facility and event scheduling, multipoint conferencing, and promotion of ad hoc educational opportunities.

f. OSI Model. (**O**pen **S**ystem **I**nterconnection) An ISO standard for worldwide communications that defines a framework for implementing protocols in seven layers. Control is passed from one layer to the next, starting at the application layer in one station, proceeding to the bottom layer, over the channel to the next station and back up the hierarchy. Most of the functionality in the OSI model exists in all communications systems, although two or three OSI layers may be incorporated into one.

g. Public Safety Wireless System. Public safety agencies across the State created a specialized design concept called **NE**braska **V**irtual **COM**munications Network (**NEVCOM**). This system is uniquely tailored to Nebraska's needs for interoperability, modern technology, and a high cost-benefit ratio for law enforcement, fire, and rescue personnel to achieve an effective wireless communications system.

h. Shared regional or statewide networks. This term generally refers to the cooperative sharing or aggregation of circuits or data to achieve common goals or objectives either among K-20 educational institutions or public safety agencies.

i. Single application networks. This term generally refers to a network used by a state agency or agencies to perform a specific function (e.g. CHARTS, NFOCUS).

j. K-20. This term generally refers to the subset of educational institutions that offer programs serving students of any level or grade from Kindergarten through graduate school including K-12 districts, technical and community colleges, baccalaureate institutions, and colleges and universities offering graduate programs. Comparatively, PreK-16 generally refers to the subset of educational institutions that offer programs serving students of any level or grade from preschool through undergraduate senior.

3. TINA. (Telecommunications Infrastructure Needs Assessment) This 1999-2000 consulting engagement with Federal Engineering, Inc., (*FE***)** of Fairfax, VA came about as a result of the State of Nebraska's RFP SCA-0146 *Telecommunications Infrastructure Assessment Consulting Services.* The objectives of this project were to perform a telecommunications infrastructure assessment, and to create a comprehensive statewide telecommunications planning document. This document is one of a series of engagement deliverables, presenting the results of the needs assessment activities undertaken by the state's consultant. The report did numerous interviews with communities of interest to generate findings related to infrastructure, economic development, and regulatory impediments. http://www.doc.state.ne.us/tina/tina.html

B. Statutes

1. Section 81-1120.19. Division of communications; powers; limitation. The division shall have authority to purchase or lease communications facilities, services, or channels on terms, which are for the best interests of the State of Nebraska. In making the decision as to what proposal is for the best interests of the state, the decision of the division shall be based upon, but not necessarily limited to, (1) the total cost to the state, computed in accordance with accepted governmental cost-accounting procedures taking into account taxes to be paid or foregone, interest rates, and obsolescence; (2) the quality of the service offered; (3) the comprehensiveness of the proposed facilities or plan; (4) the financial responsibility of the supplier or carrier submitting the proposal; (5) the repair and maintenance capabilities of the supplier or carrier; (6) the experience as a communications carrier or supplier, as applicable; and (7) the alternate methods or facilities available. The powers conferred by this section shall be subject to the condition that, except for existing state-owned facilities, the division shall obtain all exchange, intercity, toll, wide-area and private-line communications service from telecommunications carriers that are certificated or permitted by the Public Service Commission for any area in which such services are rendered.

Any purchase or lease, except from such telecommunications carriers, made by the division shall be made through the materiel division of the Department of Administrative Services pursuant to the functions, powers, and duties of such division.

2. Section 86-323. Legislature; declaration of policy. The Legislature declares that it is the policy of the state to preserve and advance universal service based on the following principles: (1) Quality telecommunications and information services should be available at just, reasonable, and affordable rates; (2) Access to advanced telecommunications and information services should be provided in all regions of the state; (3) Consumers in all regions of the state, including low-income consumers and those in rural and high-cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas; (4) All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service; (5) There should be specific, predictable, sufficient, and competitively neutral mechanisms to preserve and advance universal service. Funds for the support of high-cost service areas will be available only to the designated eligible telecommunications companies providing service to such areas. Funds for the support of low-income customers, schools, libraries, and providers of health care to rural areas will be available to any entity providing telecommunications services, maintenance, and upgrading of facilities. The distribution of universal service funds should encourage the continued development and maintenance of telecommunications infrastructure; (6) Elementary and secondary schools, libraries, and providers of health care to rural areas should have access to advanced telecommunications services as described in the Telecommunications Act of 1996. To promote the efficient use of facilities in rural areas, universal service rules should not preclude the sharing of facilities supported by universal service funds with other local users, if such ineligible users pay appropriate retail usage rates to the telecommunications company; (7) The implicit support mechanisms in intrastate access rates throughout the state may be replaced while ensuring that local service rates in all areas of the state remain affordable; and (8) The costs of administration of the Nebraska Telecommunications Universal Service Fund should be kept to a minimum.

3. Section 86-512. Legislative intent. Nebraskans, and others throughout the world, have become part of the information age, in which information is a primary element of economic, social, and cultural growth. Our ability to move information quickly and accurately through electronic means is critical to the success of education, business, agriculture, health care, government, libraries, communities, and other areas of interest in a global society. A statewide vision and strategy is needed to ensure coordinated development of the telecommunications infrastructure necessary for Nebraska to keep pace worldwide and collaboration among entities within the state and with other states.

4. Section 86-513. Legislative findings and intent. (1) The Legislature finds that appropriations for information technology continue to increase. Advances in information technology have the potential to improve government efficiency, broaden educational opportunities, and enhance services to Nebraska communities and citizens. To assure the most cost-effective use of state appropriations: (a) Responsibility should be assigned for developing a statewide vision and strategic plan to guide investments in information technology; (b) Organizational and technical support for technology budget decisions should be improved and integrated; (c) A clearinghouse should be formed for technical support and best practices information; and (d) Responsibility should be assigned to an office within state government for improving the planning, budgeting, and management of state government's information resources. (2) It is the intent of the State of

Nebraska to support the development of a unified statewide telecommunications infrastructure. The statewide telecommunications infrastructure will be scalable, reliable, and efficient. It is further the intent of the Legislature that the provisions of sections 86-1501 to 86-1514 serve to coordinate the state's investments in information technology in an efficient and expeditious manner. The provisions are not intended to impede the rapid deployment of appropriate technology or establish cumbersome regulations or bureaucracy.

5. Section 86-524. Legislative review. (1) The Appropriations Committee and the Transportation Committee of the Legislature shall jointly review the provisions of sections 86-512 to 86-524 before January 1, 2001, and every two years thereafter. The Executive Board of the Legislative Council shall designate staff with appropriate technical experience to provide the staff support for the review. The committees shall establish criteria to be used for the review in accordance with the following policy objectives within sixty days after April 3, 1998. It shall be the policy of the state to:
(a) Use information technology in education, communities, including health care and economic development, and every level of government service to improve economic opportunities and quality of life for all Nebraskans regardless of location or income; (b) Stimulate the demand to encourage and enable long-term infrastructure innovation and improvement; and (c) Organize technology planning in new ways to aggregate demand, reduce costs, and create support networks; encourage collaboration between communities of interest; and encourage competition among technology and service providers. (2) In the review, the committees shall determine the extent to which: (a) The vision has been realized and short-term and long-term strategies have been articulated and employed; (b) The statewide technology plan and other activities of the commission have improved coordination and assisted policymakers; (c) A clearinghouse of information has been established, maintained, and utilized of Nebraska's information technology infrastructure and of activities taking place in the state involving information technology, and that the information flow between and among individuals and organizations has been facilitated as a result of the clearinghouse; (d) Policies, standards, guidelines, and architectures have been developed and observed; (e) Recommendations made by the commission to the Governor and Legislature have assisted policy and funding decisions; (f) Input and involvement of all interested parties has been encouraged and facilitated; and (g) Long-term infrastructure innovation, improvement, and coordination has been planned for, facilitated, and achieved with minimal barriers and impediments.

Nebraska Network Final Report and Recommendations

Presentation to the Commissioners of the Nebraska Information Technology Commission

Monday, September 16, 2002

NITC Meeting

Lincoln, Nebraska

NITC Resolution (10/31/2001)

- The NITC directs the chairs of the Education Council, State Government Council, and Technical Panel to explore the concept of a Nebraska Education Network and recommend by January 2002 a method for evaluating the feasibility of such a network. The report to the NITC shall be in the form of a charter that includes:

Nebraska Network Work Group Charter Components (Approved by NITC 2/21/02)

- Draft goals and objectives of a shared network;
- Basic requirements of such a network;
- Critical success factors and other issues that should be addressed;
- Description of the potential relationship of the network to NETCOM;
- Potential participants and other stakeholders;
- Scope, outcomes and timeline for the evaluation.

3 Phases of Study

1. Review of Nebraska's Networks (Interim Report)
   - State Agency Networks
   - Education Networks
2. Review of 9 peer states' Networks (Interim Report)
   - Colorado, Iowa, Indiana, Kansas, Missouri, North Dakota, Oklahoma, South Dakota, Wyoming
3. Final Report & Recommendations
   - Recommendations, Fiscal Impact, Funding Model, Business Case, Risk Analysis

Interim Report (April 30, 2002)

- Summary of Existing Networks
- Strengths and Weaknesses of Existing Networks
- Summary of Objectives for a Nebraska Network
- Potential Participants and Stakeholders
- Evaluation of other States' Networks
- Preliminary Findings

Review of Nebraska's Networks

- Several state agencies operate over a dozen statewide networks with most circuits coming back to Lincoln
- K-12 and higher education entities operate almost 20 statewide or regional networks in Nebraska
- Twelve K-12 consortia connect over 250 high schools with high bandwidth, interactive video distance learning classrooms but the consortia are mostly not interconnected

Telecommunications Costs

- The Division of Communications reported an estimated $7.2 million per year on state agency data networks and an additional $130,000 for video conferencing
- K-12 reported an annual expenditure of $6.5 million on pre-discounted telecommunications costs
- The University of Nebraska budgets almost $8 million annually on voice, data and research networks
- An additional $1.8 million pays for NET 2 and NET 3 transponder space on the satellite.

Summary from Nebraska

Lack of coordination and strategic management of networks results in:

- Underutilization of networks;
- Less than optimum value from investments;
- Lack of interconnectivity and interoperability, especially among video networks;
- Lack of market power when negotiating for services;
- Problems staying current with technology.

Other States' Networks

- State Networks; of the 9 studied, 1 is owned by the state; 2 are managed by an outside provider; 3 are university 501c3's; and 3 are some state agency acting as prime contractor
- Funding is divided between those who recover all costs in service charges and/or fees and those who are full or partially funded through the legislature
- More networks seem to be moving to charges for services as networks grow and mature
- Most state networks have some type of advisory board

Summary of Other States

- No two states have implemented the same statewide network in exactly the same way
- Each has its own particular environment, strengths, and weaknesses
- Nebraska seems to have more high quality, interactive video occurring than any state except Iowa but has the least amount of interconnectivity between video systems

Business Case for a Nebraska Network

- Interoperability of systems providing video courses and conferencing;
- Increased collaboration among all K-20 educational entities;
- New educational opportunities;
- Competitiveness with surrounding states;
- Greater efficiency for participating entities;
- Better utilization of public investments.

Recommendations

Vision Statement

1. Government, educational institutions, public purpose entities, and the private sector should work together to insure that Nebraska has an efficient, reliable, and scalable telecommunications infrastructure, widespread communications networks and sufficient network support functions.

Recommendations

Statewide Purchasing and Bandwidth Aggregation

2. All public entities should aggregate their purchasing with a centralized purchasing entity.

3. The Division of Communications should be the central telecommunications purchasing entity.

Recommendations

Telecommunications Backbone Concept

4. The Network Architecture Work Group should design the technical requirements for a core routing network (backbone).
5. The Division of Communications will work with all qualified vendors to implement the core routing network.

Recommendations

Network Application Layers

6. Stakeholders should begin planning a shared statewide IP-centric Intranet for education and other interested entities
7. Allow other network application layers to co-exist on the same core routing network

Recommendations

Governance

8. The Technical Panel should take the lead on network policies, standards, and guidelines.
9. Under the auspices of the NITC, an interim work group composed of stakeholders should be formed to coordinate implementation of an IP-centric network.
10. The interim work group should research and recommend to the NITC a long-term management model
11. All entities should coordinate future network plans with the NITC Technical Panel

Recommendations

Possible Value-added Services

12. The Technical Panel should convene a work group to prepare a plan to implement a Nebraska Statewide Synchronous Video Network.
13. The Education Council should evaluate, recommend, and prioritize other value-added services to benefit K-20 education.

Next Steps

- The NITC will convene a work group composed of potential IP-centric, shared network stakeholders
- The Network Architecture Work Group develops design parameters for a core routing network in cooperation with key telecommunications providers
- The Division of Communications moves forward with an aggregated purchasing plan
- The Technical Panel video work group determines the best option for interconnection of synchronous video networks
- The stakeholder work group develops a long-term strategy for network management and support services

Scottsbluff Pilot Project

- Through the efforts of the University of Nebraska and the Division of Communications, negotiations have taken place with Qwest Communications and Sprint Local Service to acquire high speed (DS-3) service from Scottsbluff to Lincoln.
- Goals of the pilot were met:
  - The coalition between the State and the University held together
  - There was money saved through joint purchasing

Scottsbluff Pilot Project (benefits)

- Service improvement to State agencies
  - Moved from Frame Relay service to private line service
- Local access costs in Scottsbluff were reduced by approximately 19%
- Ability for fractional services above 56kps in Scottsbluff
- Excess capacity for growth of 5 T-1's
- The increased performance of the existing service without an increase in price to state agencies minimally represents a 10 to 15% cost savings

Related Aggregation Efforts (NETCOM)

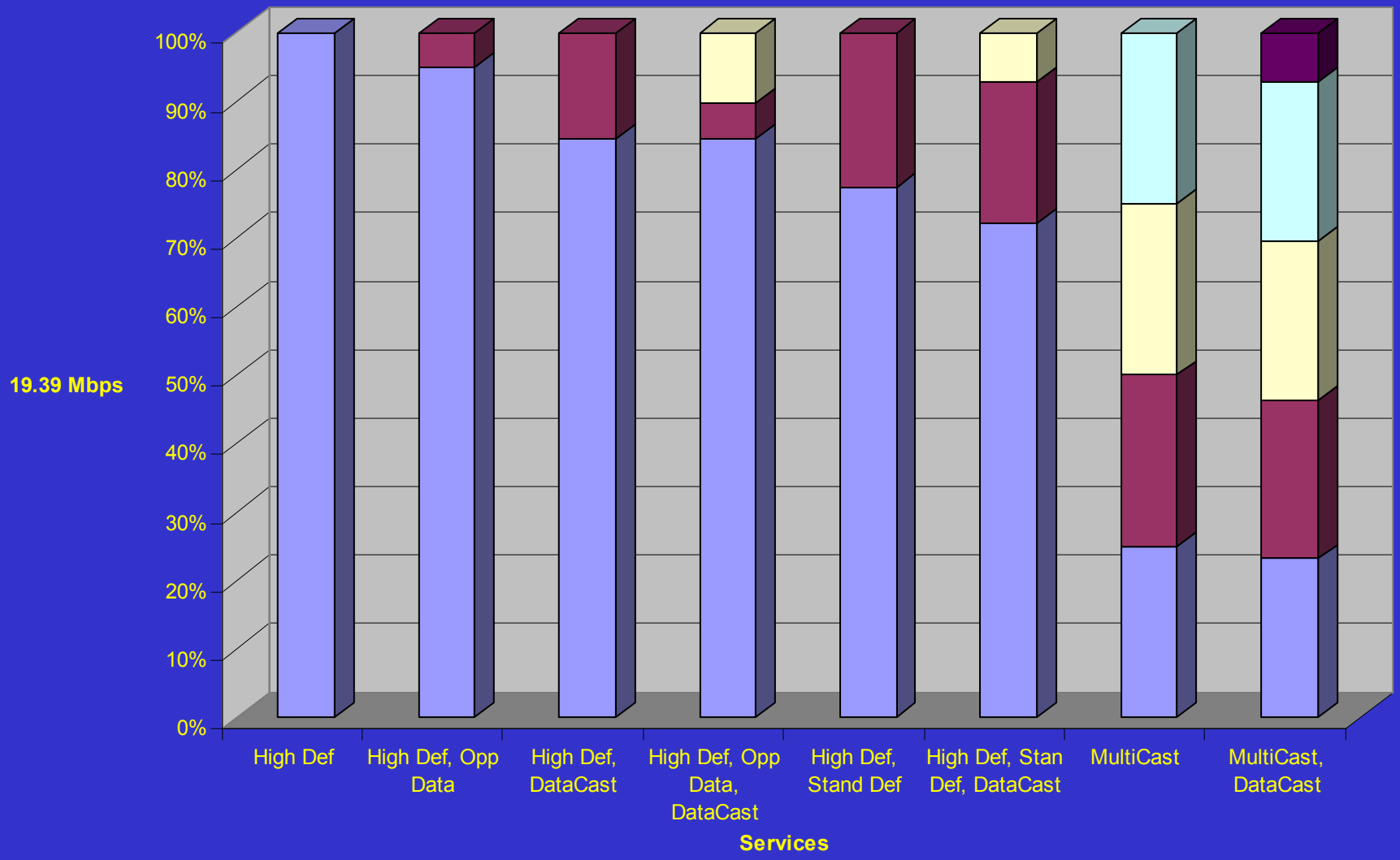
- Nebraska Educational Telecommunications is ordering terrestrial circuits through the Division of Communications
- The County automation network is combining circuits to county courthouses. Costs are now shared by DMV, Courts, HHSS, Secretary of State in all 93 counties. Two other agencies are sharing costs in selected counties, and others are under consideration.

DTV DATACASTING
EDUCATIONAL OPPORTUNITIES

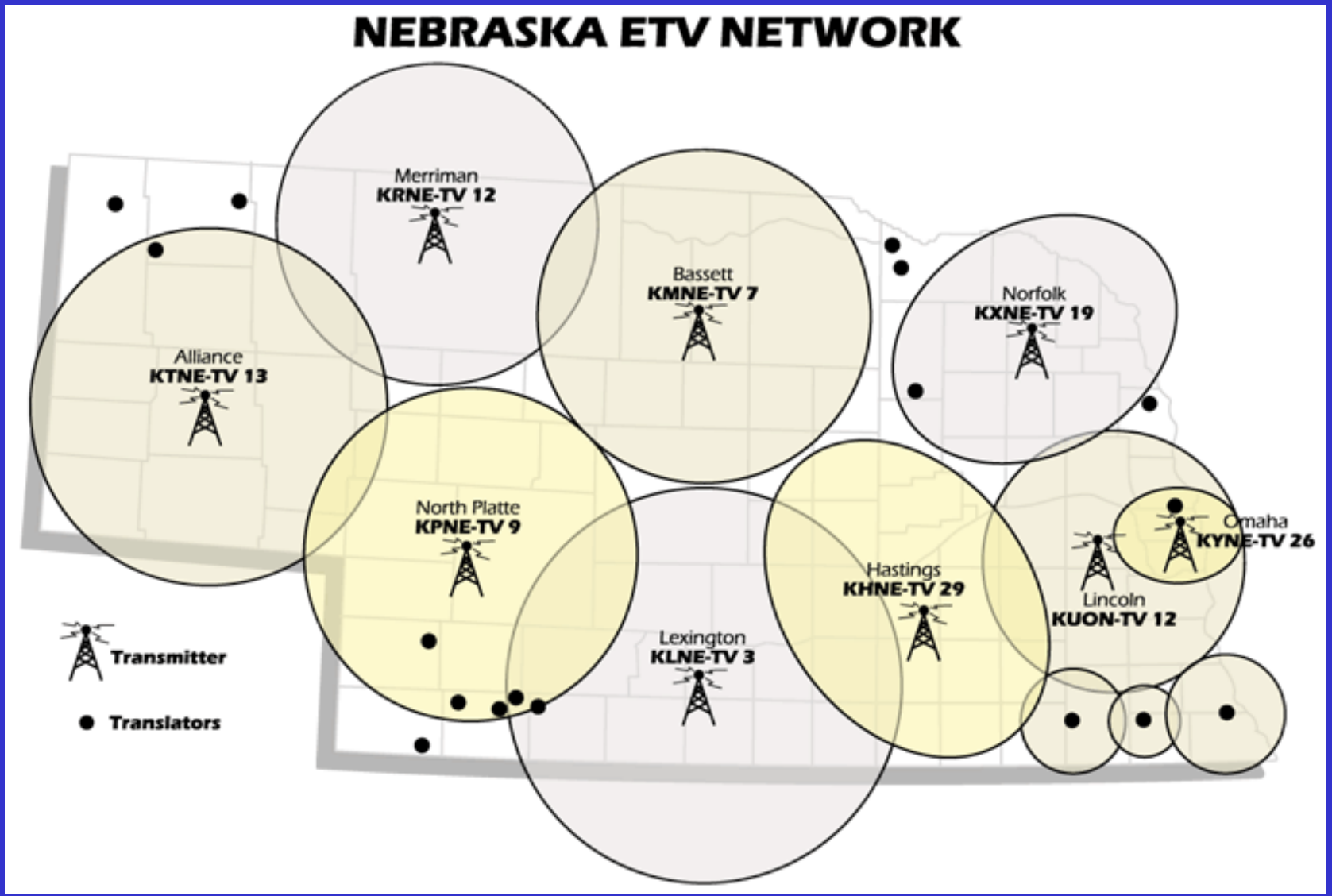
OR

SUPPLEMENTING THE LAST MILE
FOR EDUCATIONAL DATA
AND NEAR VIDEO ON DEMAND

Slicing Up DTV



NEBRASKA ETV NETWORK



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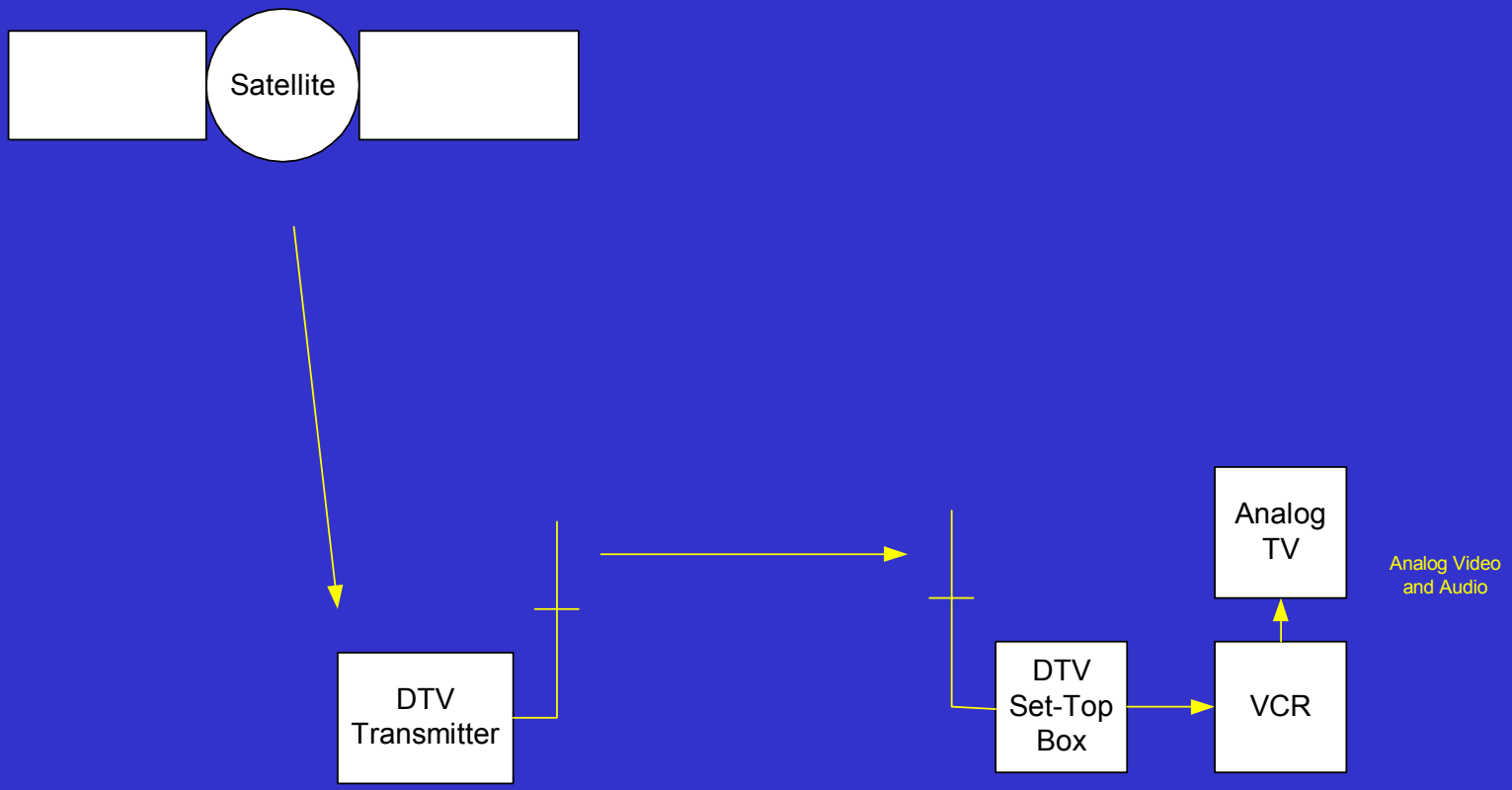

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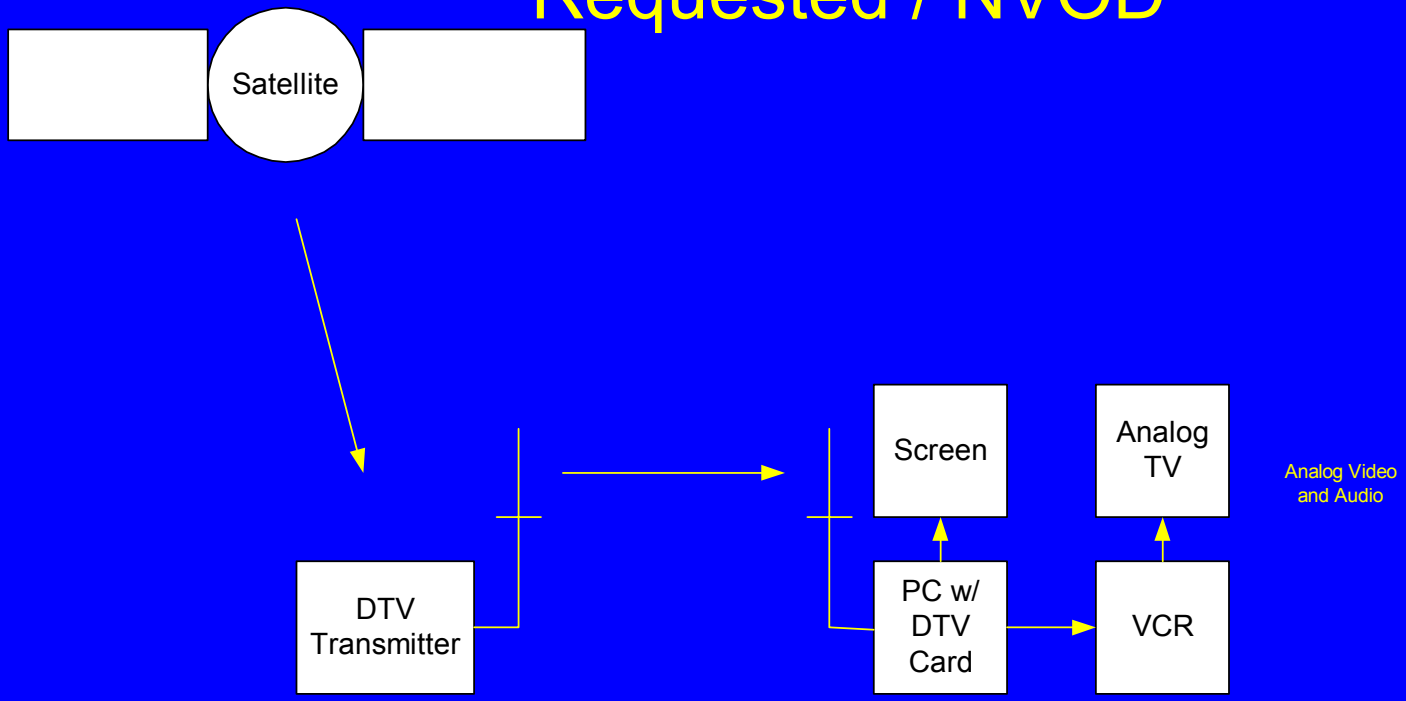

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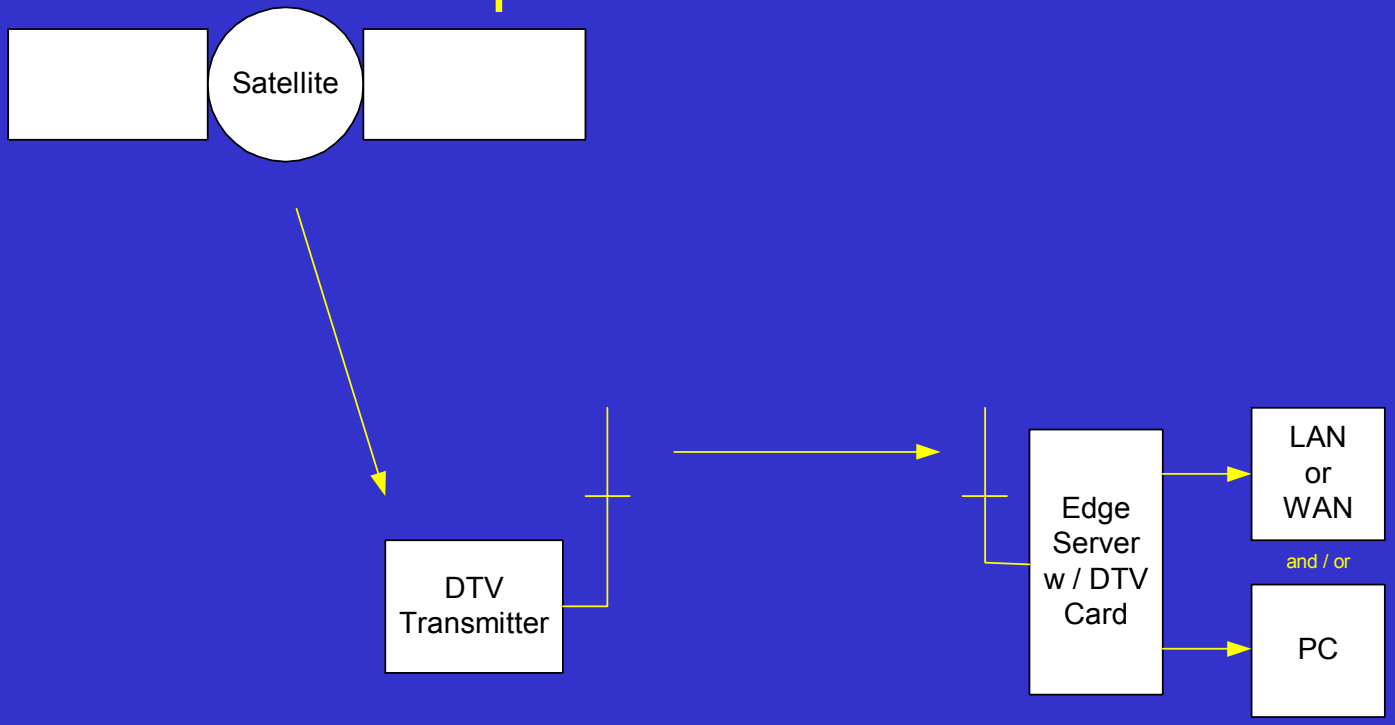

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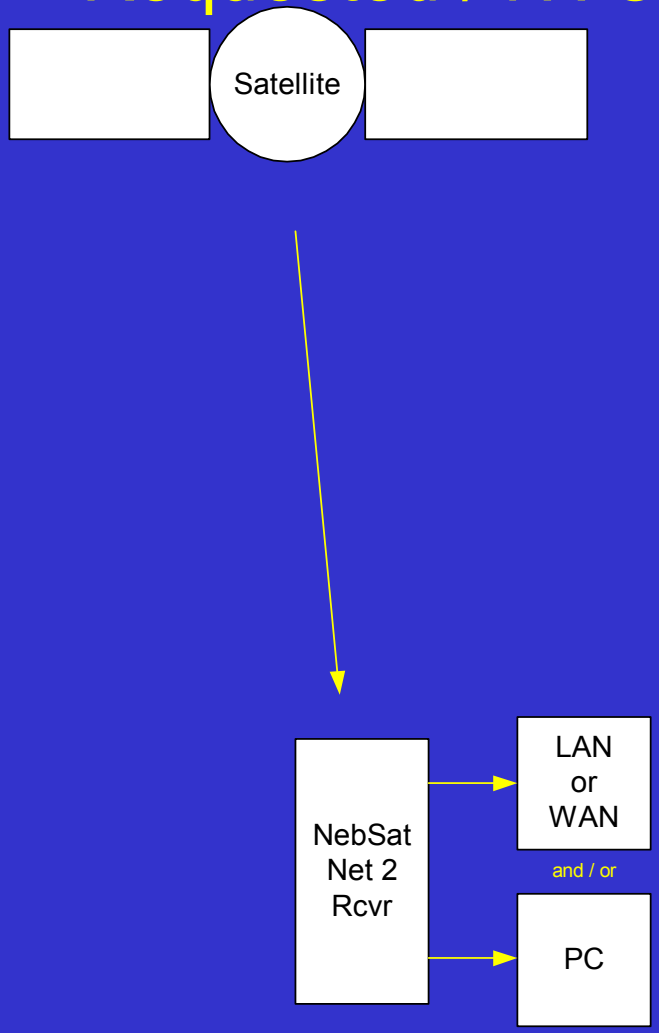

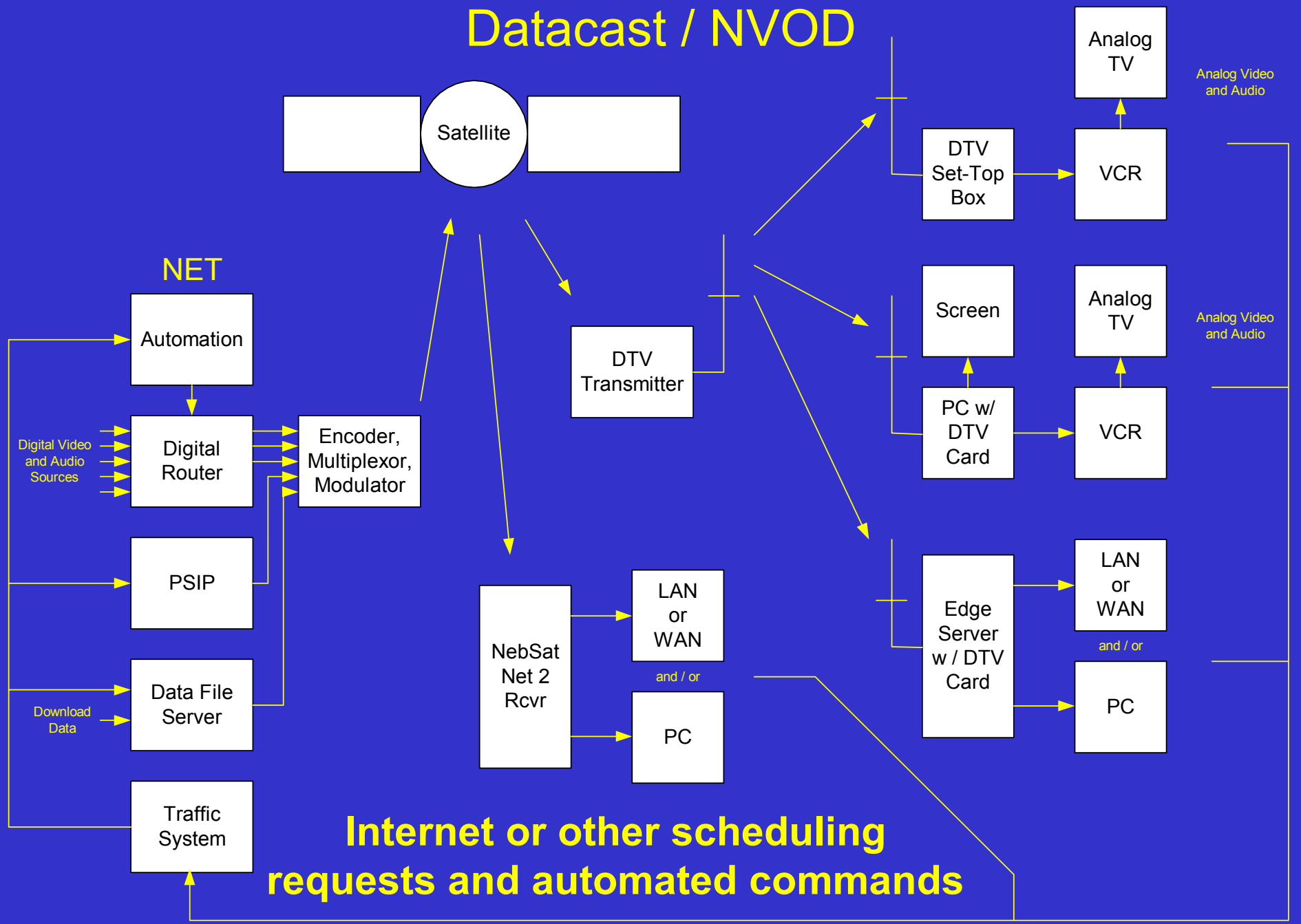
Datacast / NVOD
Satellite
NET
Automation
Digital Video and Audio Sources
Digital Router
Encoder, Multiplexor, Modulator
PSIP
Download Data
Data File Server
Traffic System
DTV Transmitter
NebSat Net 2 Rcvr
LAN or WAN
and / or
PC
DTV Set-Top Box
Analog TV
VCR
Analog Video and Audio
Screen
PC w/ DTV Card
Edge Server w / DTV Card
Internet or other scheduling requests and automated commands

Contact Information

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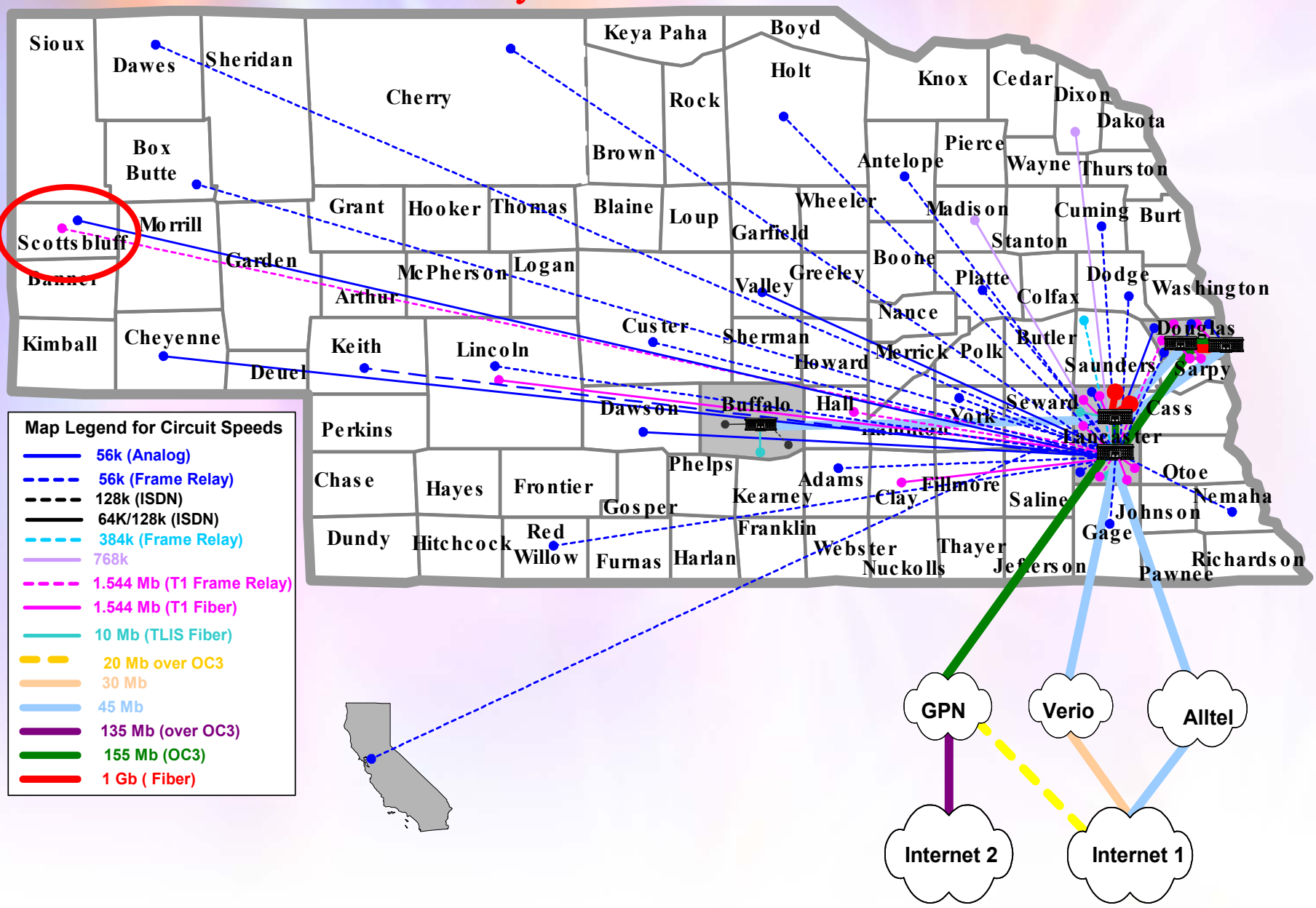
NETCOM
Phase 1
Education Focus

NETCOM

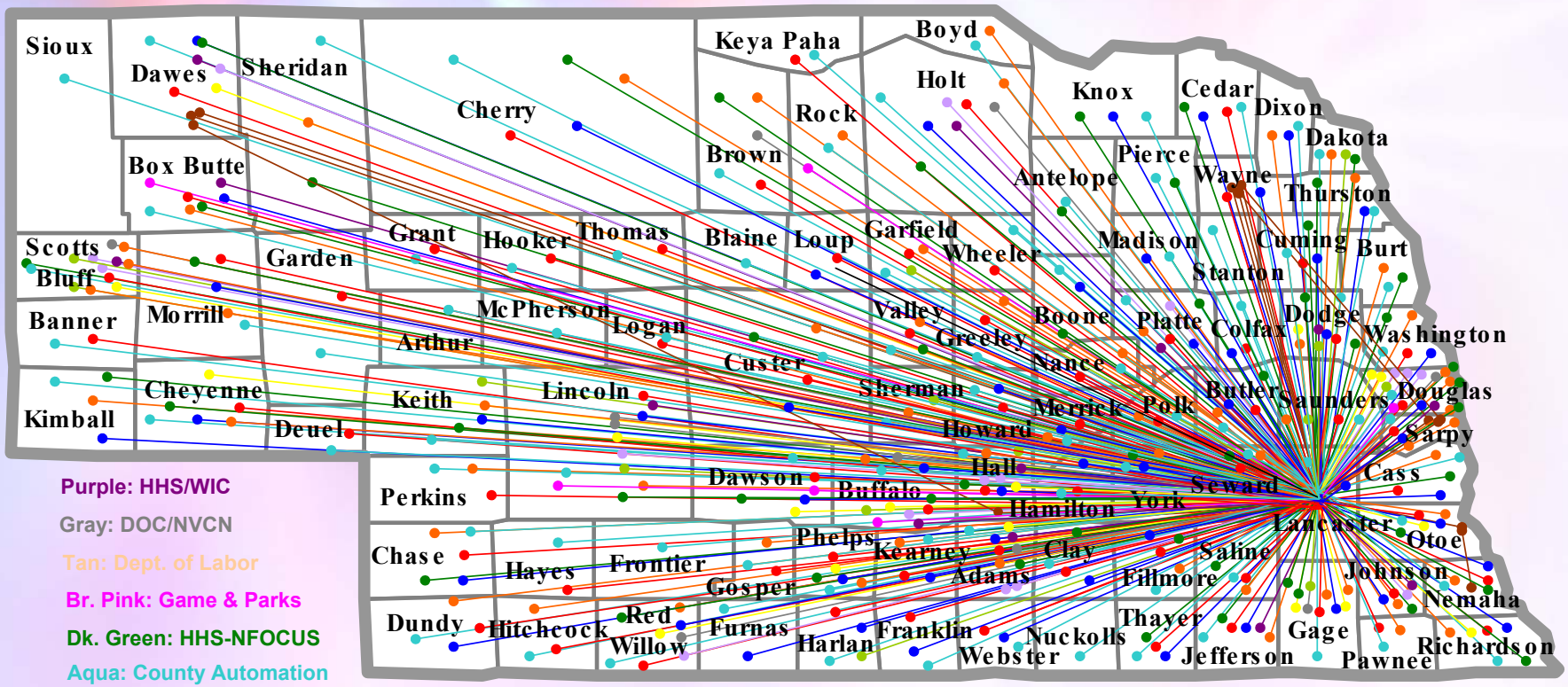
- Made up of:
  - Education – Nebraska Educational Network
  - State and Local Government
  - Community
- Concerns:
  - We still have a lot of non-believers out there who think we will never get this network built.
  - If, however, we can continue to get some improved connections in place we can advertise the fact that we are really doing something and we have the connections.
  - We then advise the local ESU's, state agencies and others that by joining forces we can provide better service at faster speeds for lower cost.

Current University of Nebraska Network



State of Nebraska

Widen Project State Networks



Purple: HHS/WIC

Gray: DOC/NVCN

Tan: Dept. of Labor

Br. Pink: Game & Parks

Dk. Green: HHS-NFOCUS

Aqua: County Automation

Red: Department of Roads

Blue: Nebraska State Patrol

Lime: Department of Revenue

Orange: HHS/CHARTS/Aging/Juv Svcs/DPI

Brown: State Colleges (Other than UNL, UNMC, UNO, & UNK)

Lavendar: Misc/Crime Comm./Dept. of Ed/NRD/DOC/MIL/Dept of Corr/Etc.

The Educational Network satisfies needs:

- **Base Infrastructure:**
  - Extending the common, every-day communications network currently prevalent throughout all campuses in the country to our University of Nebraska colleagues located across the state.

- **Equality:**
  - We believe that each of our University outreach and partner sites should be treated as an equal component of the University of Nebraska educational infrastructure.
    - Blackboard
    - Video Conferencing
    - Local Learning Centers

- Imagine the Law College facility (which is the size of our Scottsbluff operation) serviced by a communication line that only allowed one employee to access a video trial at any given time, and if it were broadcast in M-peg 2 quality, no one could access it. This is unacceptable.

- **Research:**
  - Due to the collaborative nature of research and teaching, our higher education market now extends nationally and internationally, further increasing its size and scope and offering a powerful voice for best-in-class networking projects.

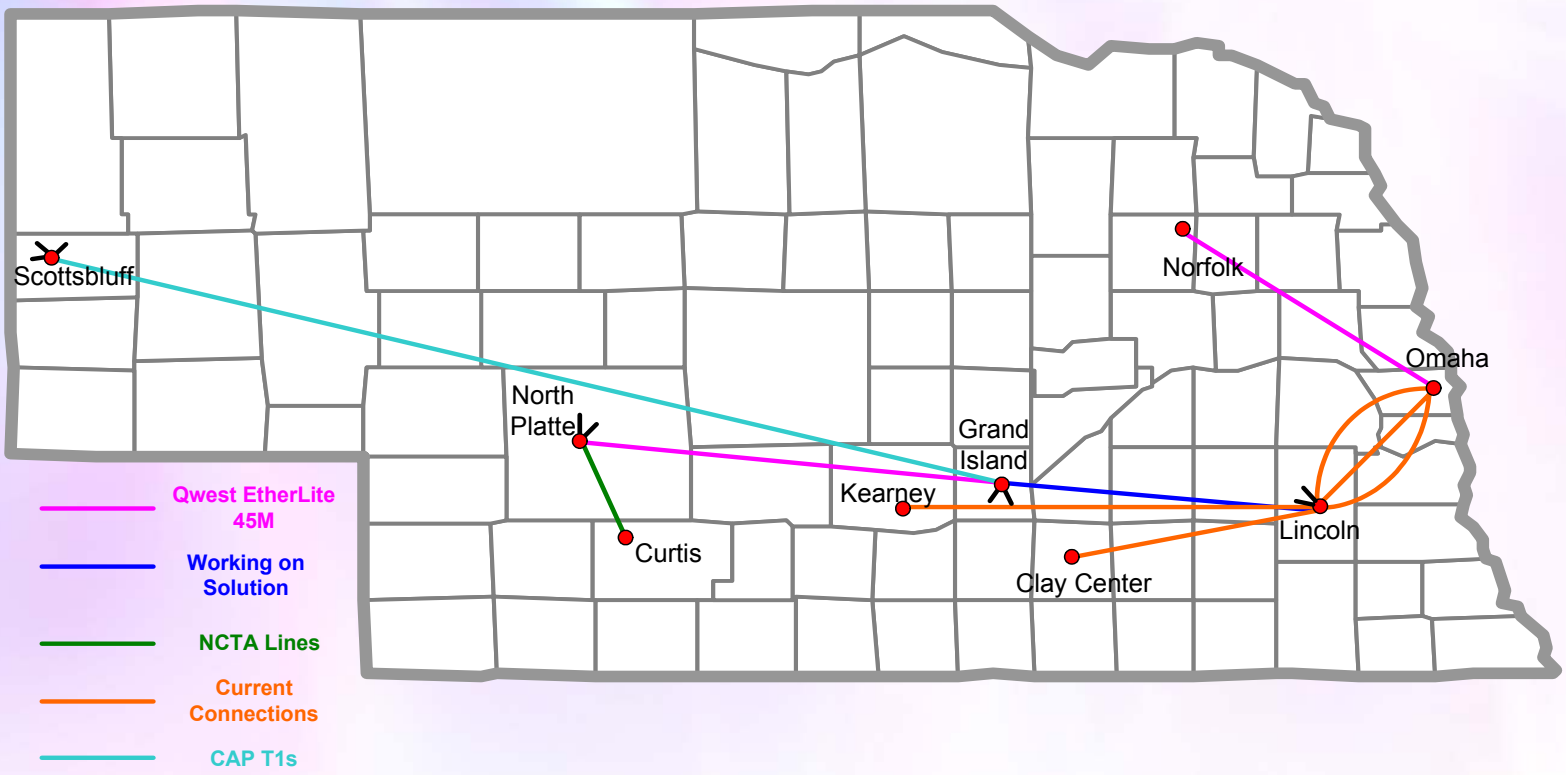
  - The Internet (and initiatives such as Internet 2) has now fostered significant additional collaborative research, which often requires greater bandwidth to provide maximum synchronicity and video conferencing. This is very true at Clay Center where, thanks to our recent upgrade, they can participate in many more research activities.

- **On-Line learning.**
  - Besides the infrastructure needed for research collaboration, we also need greater capacity to promote online learning. Increasing numbers of faculty and students are now utilizing networks for their daily instruction. Lifelong learners who do not reside on campus will need to rely on fiber or cable to the home or local extension center to complete their studies and be part of the university community.
- **Priority:**
  - We are trying to build what the campuses are telling us they want. Improved intra-state networking is in the top five of all campuses IT priorities.
- **Competition:**
  - We must stay current to compete with Kansas, Missouri, and others who advertise that they are a technology advanced institution.

Collaborative Aggregation Partnership (CAP)
"Desired" Core Backbone Sites

CAP Core Backbone Sites
September 01, 2002
with Extensions to Scottsbluff and Kearney

What the Nebraska Educational Network is putting together now. (The University)



University of Nebraska Networking Requirements

- Delivery of University services on a statewide basis.
  - connectivity to learning centers, IANR research and extension centers, cooperative extension.
- Research computing grids to facilitate research in bio-informatics, proteomics and other high priority fields.
- Enhanced video technology to support state of the art classrooms, conference rooms and video conferencing.
- Statewide network to support distance education, multimedia, shared resources.
- Multipoint video conferencing.
- IP Centric environment.
- Access to Internet 2
- Links to K-12, Healthcare.
- Network security.
  - HIPPA compliant
- Scalable bandwidth.
- Wireless.

UNIVERSITY OF Nebraska

Internet Protocol "IP" Centric

- The University wants an IP centric network:
  - IP by itself is like the postal system
    - Breaks a message into Packets and provides addressing to and from
    - Runs on ATM, ISDN, Frame relay, Ethernet, X.25, Token Ring.
  - TCP/IP establishes a connection between two hosts so that they can send messages back and forth for a period of time.

- Why IP?
  - Allows the convergence of voice, video and data on one network.
  - Supports open standards
  - Support for advanced applications
  - Insures flexible network design
  - Can allow emerging technologies to participate
  - Supports local traffic exchange
  - MPLS (multiprotocol label switching) is a technology designed, in part, to address issues of security and QofS